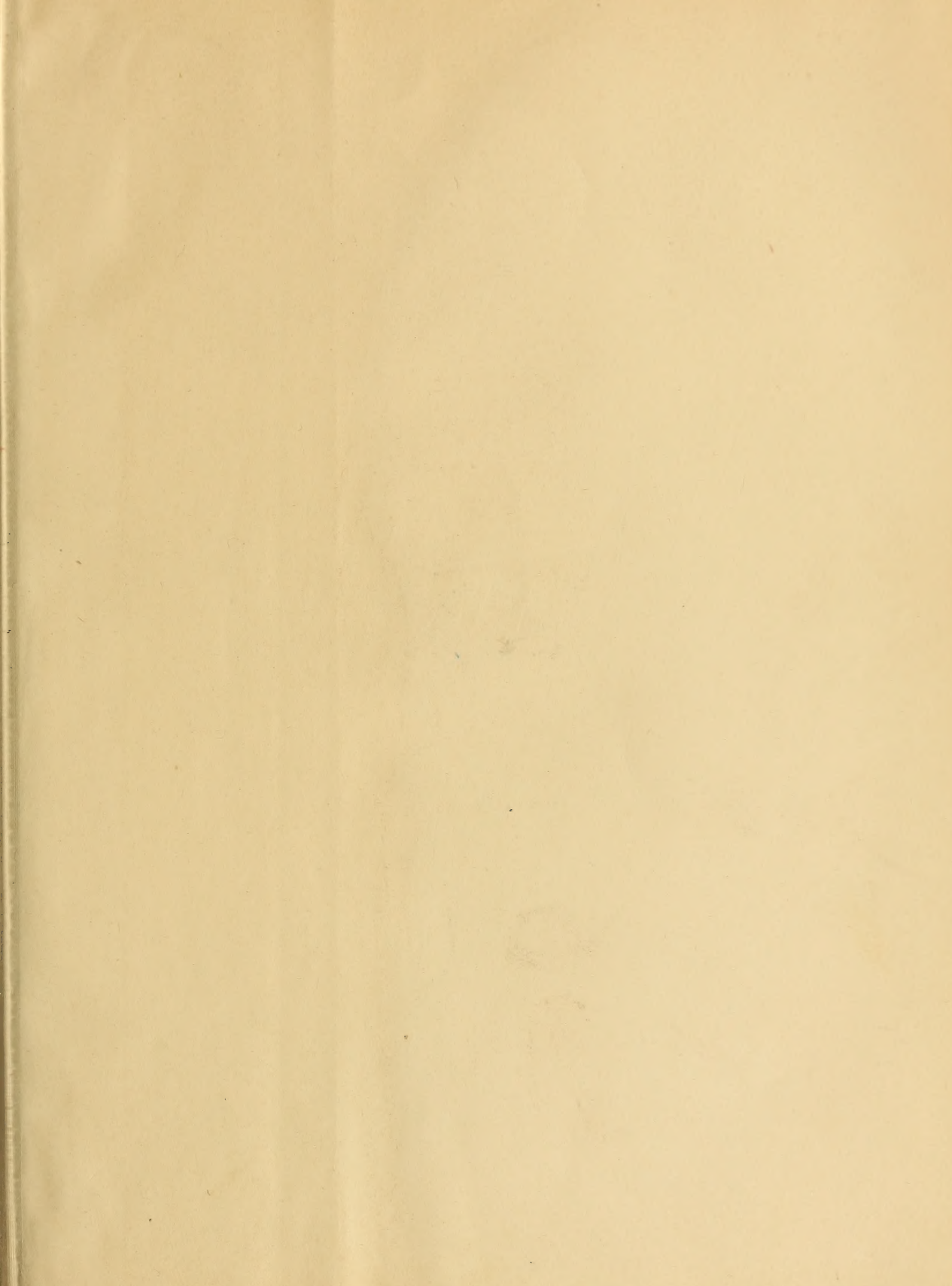


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MEDICINE.—(After Hähnel).

THE
COMPENDIUM OF HEALTH

PERTAINING TO THE

PHYSICAL LIFE OF MAN

AND THE

ANIMALS WHICH SERVE HIM,

INCLUDING

THE HORSE, OX, SHEEP, HOG, DOG, CAT, POULTRY, AND BIRDS:

EMBRACING

ANATOMY, PHYSIOLOGY, AND HYGIENE;

THE CURE AND PREVENTION OF DISEASE; THE PECULIAR FUNCTIONS AND DISORDERS
OF THE MAID, WIFE, MOTHER, AND BABE; THE NURSING OF CHILDREN

AND THE SICK; MEDICINAL RECIPES; ACCIDENTS, INJURIES,

AND POISONS; THE CARE AND IMPROVEMENT OF

THE DOMESTIC ANIMALS, ETC., ETC.

BY

EDWIN M. HALE, M. D.,

Late Professor of Materia Medica and Therapeutics, Chicago; Author of the "Materia Medica, Symptomatology, and Therapeutics of New Remedies," "Diseases of Women," "Lectures on Diseases of the Heart," "The Heart, and How to Take Care of It," etc.; Member of Medical Institutes and Academies of America; Honorary Member of State Medical Societies of New York, Massachusetts, Michigan, Illinois, Wisconsin, Indiana and Iowa, and of the Medical Society of the United States of Colombia, South America; Corresponding Member of the Massachusetts Surgical and Gynecological Society, etc., etc.,

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CHARLES A. WILLIAMS, M. D.,

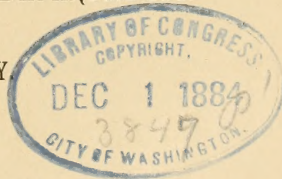
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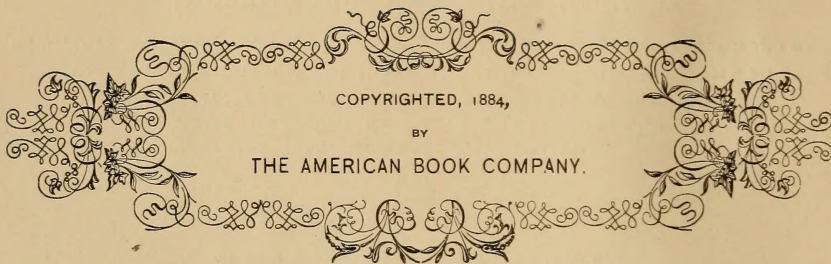
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PUBLISHERS' PREFACE.

The general purpose of domestic medical books is so well understood that we need here only note a few of the distinctive features of this work which it is believed the reader will consider points of superiority. The critic will detect many others in the details.

(1). Books of a compendious or encyclopedic nature, being especially suited to the wants of a busy public, have of late years met with a most cordial reception, since they insure dispatch in the acquisition of desired information, and do not involve the expense incident to extended special works. The present volume, the first to cover the whole domain of domestic practice, is obviously designed to take its place in this particular class of literature.

(2). The authors are in themselves a guarantee of the trustworthiness of what is presented. Doctor HALE has a fame on two continents as a writer, professor and practitioner to attest the value of what comes from his pen and experience, while Doctor WILLIAMS has few peers in his long practice, and in his special lectures. The two have sustained intimate personal and professional relations for more than twenty-five years. Upon the latter has devolved the greater labor, and to him is to be accredited those portions which are not otherwise designated. Doctor HALE has revised the proofs of Part I and the *Materia Medica*, making additions over his name, has canceled various points in the original, and made other suggestions of value upon the same. It will be seen that Part VII entire is his, as well as the excellent treatise upon "The Care of the Heart;" he also added a few articles to Chapter XII and the *Materia Medica*, which were not formally accredited. By this arrangement have been secured the substantial benefits of a dual authorship. The special authors also reveal excellences which will convince even the casual critic that each is thoroughly conversant with his respective field. Doctor FOSTER has already become known to the profession through his contributions to classical works, and his special papers before medical societies and in professional journals. Messrs. BURGESS and STODDARD unquestionably hold a front rank among

writers in their departments, as shown by their lists of publications, and Messrs. CAGWIN and STAINSKY had previously enjoyed an experience in direct observation and writings which singled them out to the authors and publishers in the selection of reputable and reliable contributors. Such parts of the book as have not been above alluded to were prepared by competent writers who freely consulted and drew from a long list of the best veterinary authorities of England and America, notably Lord, Rush, Mayhew, "Stonehenge," Law, Harris, and Martin, the admirable work of Lord and Rush being the basis of the treatment in Parts II, III, IV and VI. All such matter was reviewed and corrected by a skillful practitioner previous to its acceptance.

(3). A literary editor, not versed in medical science, has been exclusively employed for more than a year upon this work, with instructions to use his untrammelled judgment in reducing the whole to the easy comprehension of the popular reader. He has reviewed all manuscript and proof, and carefully eliminated technicalities and "big words," or clearly defined them in the context, the proofs being then submitted to the authors for the purpose of insuring exactness. Though this involved greater labor and expense than was anticipated, the publishers are repaid by the consciousness that the style is of a more popular cast than has been heretofore attained.

(4). The dimensions of household medical works—and the prices as well—have generally been extended beyond the demands of their readers by a presentation of such themes as evolution, chemical affinities, technical surgery, various "movements" and mechanical appliances, which few can understand, and fewer still apply. By excluding these the authors could accept all topics embodied in previous works which are of any practical value, and they likewise maintained a brevity of style which materially curtailed the size of the volume. The repetitions which are always incident to manuscript furnished by separate specialists were discarded by the editor without detracting in the least from any part, and this further aided in bringing within convenient compass all points which the public can find of utility. That these steps have not led to poverty of information one will be convinced by a comparative inquiry into the fullness in the description, cause, cure and prevention of disease, and other particulars.

(5). Observing the proneness of a practitioner, when writing for the family, to give special heed to those ailments which he is *called to treat*, too much at the expense of such as are less grave and yet come within the daily experience of the family, the authors of the COMPENDIUM have incorporated an unusual number of common disorders and emergencies which the reader *must* himself treat. They have shown rare patience, too, in making such additions thereto as the publishers, editor and critics have

deemed of special popular use, but which have heretofore been either wholly ignored or inadequately considered. Among these special mention may be made of the manner in which have been presented "Emergencies and Domestic Surgery," embracing simple directions upon the many crises of every-day life which do not afford time for a physician's call; "Home Nursing," the most important part of treatment in grave cases, which will undoubtedly be of great service even to the professional nurse; "The Babe: Its Care and Treatment," which will give to the anxious mother answers to just such questions as so often arise during the first and most critical year of her babe's life; "Maturity and Old Age," which will afford priceless information upon topics that have generally been little regarded.

(6). It is a cardinal and yet common error to assume that the reader knows what disease confronts him, whereas this is the most perplexing question of all. A special aim has been made in this work to so fully *describe diseases* as to surmount this difficulty before prescribing the treatment. This is the more imperative in the many instances in which two or more ailments are so much alike in symptoms as to be especially liable to confusion, and in such cases the *parallel tables of symptoms* are freely used in respect to the disorders of both man and beast. Observation being the only means of determining upon the ailment of dumb animals, the reader will be materially aided by the many *illustrations of distinctive symptoms* in the veterinary department.

(7). The explicit divisions of the whole will make it of the easiest possible reference. Not only is a separate part devoted to each division of the animal kingdom treated, thus enabling the reader to confine his study to a specific limit when investigating the needs of a particular animal, but the subdivisions are made to stand out in bold view. The repetitions which this plan would otherwise necessitate, particularly in veterinary treatment, have been avoided by suitable cross-references.

(8). Anatomy and physiology, the basis of all intelligent treatment, are set forth in an original manner that will commend itself to the reader and critic. Instead of the conventional mode of presentation—in a long treatise at the beginning or close of the book, far removed from the diseases incident to the various parts of the body—they are in the present instance placed at the heads of the chapters devoted to the diseases of the several organs, where they will be easy of reference in connection with the treatment.

(9). While it is true that the subject of hygiene is of paramount importance, it has seemed best to depart from the established practice of treating the subject independently at great length, for people rarely study

hygiene until they are *sick*, and then they wish to know how to get well. The chapter on Hygiene has therefore been limited to such simple rules as even the busy man or woman can observe, so briefly stated that they will be read. The hygiene that pertains to the various diseases is given along with their treatment, where it properly belongs.

The eminent Doctor Beard, in the preface to his excellent "Home Physician," has in the following words aptly stated one point in the policy adopted in the COMPENDIUM: "There are yet among the people those who have a blind faith in some one school or exclusive system of treatment. To all such, let me say that the wise physician of our times uses for his patients all things that have been proved to be beneficial. On this principle this work is based." This is the only rational rule, whether in practice or authorship. In observing it the authors have consulted such a large number of authorities that they have been unable to furnish a list which could be made to do justice to all, and they have simply left it to the publishers to state that they have not hesitated to use anything within the range of medical literature for which they found a warrant in the experience of their professional practice.

The reader is urged to heed the advice, repeatedly given in the following pages, to call medical counsel in all cases of a grave nature, since no book of this character can make him a skillful physician. The authors enable him to determine what disease is at hand, and set forth treatment suitable for malignant or serious cases *exclusively* for the use of those who can not reach a physician. Even if he should never adopt any part of the distinctive therapeutics, the book will insure an ample return in the intelligent view of health, disease and treatment which he will gain, and will thus greatly aid the physician when he is called.

Encyclopædias of every class, as indeed all books of reference, from their distinctive nature embody more or less topics which their readers seldom consult, their special value being found in the fact that they afford a source of information on which those of the household or community may at any hour wish to make a draught. That the COMPENDIUM will in its domain prove to be such a treasury is confidently hoped, and it is now respectfully submitted to the public for the test of its merits.

OCTOBER, 1884.

HOW TO USE THE COMPENDIUM.

(1). *Use the index.* Many excellent books of reference are of limited value to a large class of people for the simple reason that they do not spend a few minutes in acquainting themselves with the method of using the key to the whole— the index. Note the “explanations” at the head of the index on a subsequent page.

(2). Devote a little study to the *general plan* of the book before you are called upon to treat a case. *The preface will aid you in this.* Pages 34 to 41 should be made especially familiar, and of scarcely less importance are 539 to 543, references being made to the foot-notes on pages 731, 791 and 828. One reading of these will impart an intelligent understanding of the plan of the separate parts, and will require little time. Of course the salient points of Anatomy and Physiology, as presented at the heads of the several chapters, should be in the possession of *every* reader.

(3). Arm yourself against *emergencies* by following the hints on page 318.

(4). Do not treat a case until you have taken full counsel as to the choice of the remedy, the dose, etc., which are considered on pages 925-929; and notice *all* that is said about a given remedy in the *Materia Medica* before you prescribe it. Read *all* that is said on a disease before you begin to treat it

(5). Many topics have been so presented as to afford entertaining and profitable reading for leisure hours, and at the same time conduce to readiness in the use of the book. Among these are Hygiene, Maturity and Old Age, and Home Nursing. Every mother should particularly acquaint herself with what is said about the Babe, for she must almost wholly depend upon her own observation to determine when her babe is ill, and what its ailment is. In this class of reading are pages 713-728, 849-856, 867-877, 909-918.

(6). A frequent error is made in domestic practice by deciding that a particular disease is at hand because a patient presents a *few* symptoms which the family book mentions as incident thereto, whereas a further study would detect the *same* symptoms in connection with others that mark a very different complaint. *Certain symptoms are common to almost all derangements of the system*, and hence the reader should look most closely for those which are *peculiar* to a given disorder, rather than for those which are *common* to many. Do not neglect the parallel tables of symptoms.

(7). *It is impossible for you to have at the same time all of the diseases mentioned in this volume.* This caution appears ridiculous, but trustworthy domestic works have been, in the hands of some of their readers, a source of perplexity because they have been heedlessly used. Owing to the existence of that class of almost universal symptoms which were alluded to under the sixth caution above, some credulous readers fancy that the description of each particular disease is a faithful picture of their condition. The charlatan waxes fat on this credulity of superficial observers.

(8). When the advice is given to send for a physician, do not depend upon yourself if professional advice is within call. The COMPENDIUM will abundantly pay for itself in the assistance rendered in disorders that legitimately come within domestic practice.

CONTENTS.

PART I.

MAN AND HIS DISEASES.

Chapter I.—The Framework of the Body. Chapter II.—Signs of Health and Disease. Chapter III.—The Nervous System. Chapter IV.—The Organs of Digestion. Chapter V.—The Organs of Circulation. Chapter VI.—The Organs of Respiration. Chapter VII.—The Skin. Chapter VIII.—The Urinary Organs. Chapter IX.—General Diseases. Chapter X.—The Eye and Ear. Chapter XI.—Emergencies and Domestic Surgery. Chapter XII.—The Maid and the Wife. Chapter XIII.—The Mother and her Babe. Chapter XIV.—Maturity and Old Age. Chapter XV.—Home Nursing. Chapter XVI.—Hygiene.. 23-498

PART II.

THE HORSE AND HIS DISEASES.

Introduction. Chapter I.—Signs of Health and Disease. Chapter II.—The Nervous System. Chapter III.—The Digestive System. Chapter IV.—The Organs of Circulation. Chapter V.—The Respiratory Organs. Chapter VI.—The Skin. Chapter VII.—The Urinary and Generative Organs. Chapter VIII.—The Eye and Ear. Chapter IX.—The Extremities. Chapter X.—General Diseases and Injuries. Chapter XI.—General Care.....499-728

PART III.

THE OX AND HIS DISEASES.

Chapter I.—The Nervous System. Chapter II.—The Digestive Organs. Chapter III.—The Organs of Respiration. Chapter IV.—The Skin. Chapter V.—The Urinary and Generative Organs. Chapter VI.—Miscellaneous Disorders and Injuries.....729-788

PART IV.

THE SHEEP AND ITS DISEASES. 789-804

PART V.

THE HOG AND HIS DISEASES.....805-816

PART VI.

THE DOG AND HIS DISEASES.. 817-846

PART VII.

THE CAT AND ITS DISEASES.....847-864

PART VIII.

POULTRY AND LARGE BIRDS 865-906

PART IX.

CAGE BIRDS AND THEIR DISEASES.....907-924

MATERIA MEDICA.

REMEDIES, DOSES, FORMULAS, ETC.....925-945

LIST OF ILLUSTRATIONS.

	PAGE.		PAGE.
Medicine.....	<i>Frontispiece</i>	The Retina.....	273
The Human Skeleton.....	26	Orbit of the Eye.....	274
The Spinal Column.....	28	The Lachrymal Organs.....	275
Section of the Foot.....	28	Foreign Matter in the Eye.....	282
The Muscles.....	30	Accommodation.....	284
Biceps in the Forearm.....	32	Shapes of the Eyeball.....	286
Tendons of the Forearm and Hand.....	32	Section of the Ear.....	293
Sections of Muscles.....	33	Outer Surface of the Drum-head.....	294
Urinometer.....	40	Inner Surface of the Drum-head.....	294
The Nervous System.....	42	Bones of the Ear.....	295
Magnified Nerve-ganglion.....	43	Articulated Bones of the Ear.....	295
Top View of the Cerebrum.....	44	The Labyrinth of the Ear.....	296
Rear and Base of the Brain.....	45	Stoppage of Blood by Light Pressure.....	319
Section of the Spinal Cord.....	46	Artery of the Arm and Shoulder.....	320
Section of the Brain.....	47	Artery of the Leg.....	320
Nerves of Taste.....	48	Pressure on the Finger.....	322
Nerves of Smell.....	48	Pressure at the Wrist.....	323
The Pneumogastric Nerve.....	48	Pressure on the Upper Arm.....	323
The Sympathetic System.....	49	Pressure on the Thigh.....	323
Section of the Jaws.....	85	Pressure under the Arm.....	323
Section of a Tooth.....	85	Pressure on the Neck.....	323
The Jaws and Teeth.....	86	Dressing with Plaster.....	326
Salivary Gland.....	87	Bandaged Hand and Wrist.....	329
Organs of Digestion.....	87	Bandaging the Ankle.....	329
Chest, Abdomen and Intestines.....	88	Bandaging the Foot.....	329
Villi of the Intestines.....	89	Bandage for the Head.....	329
The Heart and Blood-vessels.....	129	Excluding Poison from the System.....	332
Chambers of the Heart.....	129	Extinguishing a Flame.....	335
Valves of the Heart (2).....	130	Clearing the Throat of the Drowned.....	340
Arteries of the Body.....	131	Artificial Inspiration.....	341
Capillaries.....	132	Artificial Expiration.....	341
Cycle of Circulation.....	133	The Michigan Method.....	341
Lacteals.....	134	Foreign Body in the Eye.....	351
Lymphatics.....	135	Securing a Fractured Leg.....	352
Larynx and Windpipe.....	170	A Sling for the Arm.....	352
Vocal Cords.....	170	Reducing a Dislocation.....	353
Organs of the Chest.....	171	Reduction by the Patient.....	353
Magnified Air-cells.....	171	Maidenhood.....	372
Cilia.....	172	The Mother and Babe, <i>colored</i>	393
Section of the Skin.....	194	Maud S.....	500
Root of a Hair.....	194	Dexter.....	504
The Urinary Organs.....	210	Lady Thorn.....	507
The Internal Organs, <i>colored</i>	225	St. Julien.....	509
Vapor-tent.....	247	Jay-Eye-See.....	513
Section of the Right Eye.....	270	The Original Trotter.....	516
Anatomy of the Eye.....	272	Hambletonian (Rysdyk's).....	519

	PAGE.		PAGE.
Bashaw (Green's).....	522	Dressing for Curb.....	655
Peerless.....	525	Wind Galls.....	656
Hinda Rose.....	529	Capped Hock.....	658
Wild Flower.....	533	Capped Knee.....	658
Johnston.....	536	Sling for Breaking-down.....	662
Skeleton of the Horse.....	538	Varieties of Splint.....	663
Symptom of Brain Fever.....	544	Stages of Quittor (2).....	665
Symptom of Megrims.....	549	Section of the Foot and Pasterns.....	666
Symptoms of Hydrophobia (2).....	552	Sign of Navicular Disease.....	667
Feeding during Tetanus.....	554	Position in Foot-founder.....	668
Teeth of the Horse (17).....	559-562	Seedy Toe.....	670
Spasmodic Colic (2).....	564	Sandcrack Dressed (3).....	672
Flatulent Colic.....	565	False Quarter.....	673
Sign of Abdominal Irritation.....	566	False Quarter Shod.....	673
Pressure to Detect Enteritis.....	566	Sling for Open Joint.....	675
Hot Cloths on the Abdomen.....	567	External Marks of Disease.....	679
Symptom of Acute Gastritis.....	571	Seat of Mumps.....	684
Position in Peritonitis.....	574	Confirmed Influenza.....	686
Symptoms of Worms (2).....	577	Nose-bag for Influenza.....	687
Bots in the Stomach.....	578	Sling for Rheumatism.....	692
Symptom of Stomach Staggers.....	582	Proof of Glanders.....	694
High Choke.....	584	Sign of Farcy.....	696
Low Choke.....	584	Sign of Purpura Hæmorrhagica.....	700
Aphthous Mouth.....	586	Fistulous Withers.....	703
Caries and Toothache.....	587	Early Stage of Poll-Evil.....	704
Salivary Calculus and Fistula.....	589	Dislocated Whirl-bone.....	711
Symptoms of Heart Disease.....	593	LaPorte's Structure and Proportions.....	715
Sign of a Cold.....	601	Section of the Horse's Foot.....	727
Steaming-bag for Bronchitis.....	603	Sensitive Parts of the Foot.....	727
Confirmed Bronchitis.....	604	Skeleton of the Ox.....	730
Compresses for Bronchitis.....	604	Sketch of the Ox.....	730
Eight-tailed Bandage.....	604	Stomach of the Ox.....	735
Sounds in the Windpipe.....	605	Section of the Stomach (2).....	736
Fomentation of the Throat.....	606	Merino Sheep.....	790
Position in Congestion.....	607	Sheep with Scab.....	798
Position in Pneumonia.....	609	Skeleton of the Hog.....	806
Symptom of Pleurisy.....	612	Rob Roy.....	818
Sketch of the Horse.....	620	Handsome Tom.....	848
A Horse with Surfeit.....	622	Hafiz.....	857
Stages of Grease (2).....	623	Sketch of a Cock.....	866
Test for Mange.....	625	Gray Games.....	873
Mallanders.....	627	Breathing Apparatus of Fowls.....	877
Sallenders.....	627	Gape-worms.....	883
Position in Urinary Disorders.....	631	Feather for Removal of Gape-worms.....	885
Internal Organs of the Horse.....	632	Buff Cochins.....	891
Inflammation of the Bladder.....	633	Crested and Bearded Polish Fowls.....	898
A Horse with Albuminous Urine.....	636	The Ovary of Fowls.....	924
A Horse with Bloody Urine.....	638	The Oviduct of Fowls.....	904
Dressing for the Eye.....	646	The Family Choir.....	908
Partial Cataract.....	648	Nest of the Oriole.....	911
Complete Cataract.....	648	Canaries and Nest.....	913
Bog Spavin.....	653	Mocking-bird.....	915
Thorough-pin.....	653	Goldfinch and Nest.....	916
Bone Spavin.....	654	Canary with Consumption.....	919
Curb.....	655		

Total number of Illustrations, 227.



INDEX.

EXPLANATIONS.—One will readily determine upon a disease by turning to the general reference to the *particular part of the body* which is affected, as Bowels, Brain, Eye, Heart, Lungs, Stomach, etc., and this topical feature is maintained on such subjects as Babe, Sick-room, Poisoning, Horse, Ox, etc. By such grouping the index is very greatly reduced in dimensions and its value enhanced, without lessening the number of references; and yet the cross-references are very full. When more than one Part of the book is referred to under a given topic, the requisite distinctions are made by the following equivalents: H, Horse; O, Ox; S, Sheep; Hg, Hog; D, Dog; C, Cat; P, Poultry; B, Birds; ff, "and following pages." If neither of the initials is found, the reference is to *Man*, unless it *obviously* pertains to a subsequent Part. The figures refer to pages.

Abomasum, O, 735.
 Abortion, 407. H, 640. O, 767. S, 801.
 Abscess, 267, 304, 417. H, 701. O, 787.
 D, 846. P, 897.
 Absorbent vessels, 134.
 Accelerators, 137.
 Accidents, *see Emergencies and Injuries*.
 Accommodation, 284.
 Acid, *see Carbolic, etc.*
 Acne, 200.
 Adornments of the home, 487.
 African finches, food for, 917.
 After-birth, 411, 416. H, 641.
 After-dinner sleep, 482.
 After-pains, 414.
 Aged, care of the, 446; food, 446; rest, 447;
 warmth, 447; clothing, 447; bed-rooms,
 445, 447.
 Ague, 228, 230.
 Air, in health, 487; in sickness, 451; effect
 on the heart, 151. H, 713.
 Air-cells, 171.
 Albumen-water, 473.
 Albuminuria, 215, 398, 405; 495. H, 635.
 Alcohol, 83, 152, 160, 316; inherited appe-
 tite, 495.
 Alcoholism, 153, 154.
 Altering, *see Castration*.
 Alternation of remedies, 929.
 Amenorrhœa, 377.
 American cattle plague, 779.
 American race horse, 512.
 American rinderpest, 778, 779.

Anasarca. H, 699.
 Anatomy, importance of, 25. H, 539. O,
 731. S, 791. Hg, 807. D, 828. P, 872.
 B, 912.
 Aneurism, 148, 169. H, 597.
 Angina pectoris, 143, 166.
 Anthrax, H, 698. O, 740, 743. Hg, 808,
 809. P, 871.
 Antidotes, 358.
 Aorta, 129.
 Aphtha, H, 586.
 Apoplexy, 60, 349. H, 545, 546. O, 732,
 784. S, 792. Hg, 813. D, 831. C, 859.
 P, 894.
 Appetite, 38; loss of, 99; for alcohol and
 tobacco, 495. H, 541; loss of, 579; de-
 praved, 580. O, depraved and excessive,
 742. S, loss of, 704.
 Apple-water, 473.
 Arnica, cause of erysipelas, 250.
 Arrowroot food, 174, 175.
 Artery, 131; bleeding from, 133; pulmo-
 nary, 129. H, enlargement, 597.
 Artificial breathing, 340.
 Ascites, 258.
 Asiatic cholera, 115.
 Asphyxia, *see Suffocation*.
 Ass, the, 539.
 Asthma, 183; millars, 183; hay, 184. D,
 838. P, 880. B, 918.
 Astigmatism, 288.
 Athletic sports, bad effects of, 155, 160.
 Atomizer, 174.

- Atrophy of the heart. H, 595.
 Audiphone, 317.
 Auditory canal, 294, 298.
 Auricles, of the heart, 129; of the ear, 294, 298.
 Aviary, 910.
 Babe, care of the, 421; diseases, 422; nursing, feeding and weaning, 424; milk for, 426; exercise, 430, 431; clothing, 429; bathing, 429; signs of sickness—temperature, 433; mouth, 433; breath, 433, 435; tongue, 435; skin, 435; bowels, 435; urine, 435; pulse, 433; facial expression, 432; gestures, 433; cry, 422, 433; chafing, 423; mortality, 421; colic, 423; vomiting, 422, 435; snuffles, 422; sore eyes, 422; new-born, 411; still-born, 412; breasts, 423.
 Baby-basket, 410.
 Baby-talk, 58.
 Baker's itch, 199.
 Ball-playing, 147.
 Bandages, 329, 352.
 Barber's itch, 199.
 Barley for horses, 721.
 Barley-water, 472.
 Bathing, effect on the ear, 310.
 Baths, for the well, 477; for the sick, 467, 472. H, 724. C, 855. B, 912.
 Beaks, deformed, 923.
 Bealed breasts, 417.
 Beans for horses, 720.
 Bearing-down of the womb, 385.
 Bed-rooms, for the well, 482; for the aged, 445, 447; for the sick, 451.
 Beds, 481. H, 727.
 Bed-sores, 207.
 Beef, diseased, 787.
 Beef-tea, 474.
 Beer, 154.
 Bee-stings, 334.
 Belly, black, B, 921.
 Bell-ache, *see Colic*.
 Bile, 88.
 Bile-tube, 88.
 Bilious fever, 228.
 Biliousness, 120.
 Birds, care of, 907-917; diseases of, 917-924.
 Bishoping the teeth, H, 558.
 Bites, 332; of insects, 334; of mad dogs, 332; of snakes, 333. H, 630. O, 762.
 Black belly, B, 921.
 Black mouth, S, 794.
 Black quarter, O, 774, 776. S, 804.
 Black-rot, P, 899.
 Black tongue, O, 740, 774.
 Black water, O, 764, 779.
 Bladder, 210, 211; inflammation, 214. H, falling, 635; inflammation, 633; spasm, 634. O, inflammation, 763; spasm, 764, 765; stone in, 765. Hg, inversion, 816; stone in, 816. D, inflammation, 843.
 Blain, O, 740, 774. S, 793.
 Bleeding, persistent, 321; spider's web for, 321; directions for stopping, 322; in hand or foot, 322; in arm or leg, 322; in head or neck, 324; in mouth or lungs, 324; after delivery, *see Flooding*. H, 618.
 Blindness, H, prevention, 651. P, 880.
 Blisters, 84.
 Bloating, S, 794.
 Blood, spitting, 187; vomiting, 98; flow of, *see Bleeding*; circulation, 129.
 Blood-heat, 35.
 Blood-vessels, 129; in lungs, 171.
 Bloody flux, *see Dysentery*.
 Bloody murrain, 774, 776, 779.
 Bloody urine, H, 638; O, 764.
 Blowing, H, 614.
 Blows, 346.
 Blue disease, Hg, 809.
 Boating, 147.
 Bog spavin, 652, 653.
 Boils, 202; in the ear, 304. D, 846. C, 863. P, 897.
 Bone spavin, H, 654.
 Bones, table of, 27; structure, 29; growth, 29; broken, *see Fractures*. H, dislocated, 711; fractures of, 712. O, swollen, 787; fractures, 787. P, broken and dislocated, 903. B, broken, 924.
 Boots, proper kinds, 480.
 Bots, 578.
 Bowels, index of disease, 40; inflammation, 122; in late life, 439. H, balls in, *see Concretions*; inflammation, 563, 566. O, inflammation, 744, 750. S, inflammation, 804. D, inflammation, 833; worms in, 835. B, inflammation, 920.
 Brain, structure, 44; concussion, 347; fever, 59; inflammation, 59. H, concussion, 550; inflammation, 544; fever, 544. O, fever, 731, 732; water on, 784. S, inflammation, 791.
 Bran for horses, 721.
 Bran poultice, 464.
 Braxy, S, 802.
 Bread poultice, 464.
 Break-down behind, P, 905.
 Breaking-down, H, 661.
 Breast-milk, 424-427.
 Breasts, care of, 401; pain in, 401; inflammation, 417; bealed, 417.
 Breath, offensive, 96.
 Breathing, offices of, 172; organs, 170; artificial, 340; in late life, 441. H, 544, 598; thick, 614; broken, 613.
 Breathing apparatus. P, 877.
 Breeds, H, 514. D, 821.
 Bright's disease, 220, 259. H, 635.
 Broken bones, *see Bones*.
 Broken-heart, 157.
 Broken hoof, H, 669.
 Broken wind, H, 613.

- Bronchi, 171.
 Bronchial tubes, 171.
 Bronchitis, 179. H, 602. O, 753, 754, 755. S, 797. D, 821. C, 861. P, 880, 886.
 Bronchocele, 263.
 Bruises, 330. H, 705. O, 787. P, 903.
 Brushing, H, 664.
 Buck-tooth, H, 587.
 Buff Cochins, 891.
 Bullfinch, food for, 917.
 Bumble-foot, P, 897.
 Bunion, 202.
 Burns, 335, 337. D, 835.
 Byerly-Turk line, 511.
 Caffeine, 149.
 Cage for birds, 910.
 Cage-birds, 907-924.
 Calving, 766, 775.
 Canary, food for, 914.
 Cancer, 266.
 Canker of the feet, H, 671.
 Canker of the mouth, D, 832. P, 880, 888.
 Cannon bone, H, 666.
 Capillaries, 131; bleeding from, 133.
 Capped elbow, H, 659.
 Capped hock, H, 657.
 Capped knee, H, 658.
 Carbolic acid, poisoning by, 367.
 Carbuncle, 205.
 Cardinal, food for, 916.
 Care, effect on the heart, 144.
 Caries, H, of the face, 617; of the jaw, 586.
 Carpets in the sick-room, 456.
 Carrot poultice, 464.
 Cart-horses, 515.
 Cartilage, 28.
 Castration, H, 643. O, 770. Hg, 816.
 Cat, bites of, 332; origin and history, 849; traits, 850; varieties, 852; health, 853; food and drink, 853; care of fur, 855; housing, 855; diseases, 856 ff; medicines, 857; with kittens, 863.
 Cataract, 288. H, 647. O, 785. D, 846.
 Catarrh, 174, 310. H, 601. O, 752. S, 797. D, 832. C, 859. P, 886. B, 918.
 Cathartics, 105.
 Cattle plague, 777, 779.
 Caustics, burning by, 337.
 Cellars, foul, 491.
 Cerates, 926; *see Formulas*.
 Cerebellum, 45.
 Cerebro-spinal fever, H, 550.
 Cerebro-spinal meningitis, 65.
 Cerebro-spinal system, 44.
 Cerebrum, 44.
 Chaffinch, food for, 907.
 Chafing, 201; of babes, 423; of the ear, 304.
 Chambers of the heart, 129, 130.
 Change of life, 390, 448.
 Chapped hands and lips, 208.
 Chapped heel, H, 624.
 Chaps, O, 758.
 Charcoal poultice, 464.
 Chicago fire, effects of, 145, 159.
 Chicken broth and soup, 474.
 Chicken powders, 875.
 Chicken-pox, 237. P, 897.
 Chickens, care and treatment, 867.
 Chilblain, 201.
 Child-bed, *see Confinement*.
 Child-bed fever, 415.
 Child-birth, *see Parturition*.
 Children's diseases, 309.
 Chills, *see Ague*. P, 901.
 Chip, P, 888.
 Chloral, 83.
 Chlorosis, 381.
 Choke-damp, 344.
 Choking, 343. H, 583. O, 786. D, 836.
 Cholera, simple, 112; Asiatic, 115. Hg, 809; false, 810. P, 878.
 Cholera infantum, 113.
 Cholera morbus, 112.
 Cholerine, *see Diarrhœa*.
 Choreia, 57.
 Choroid coat, 272.
 Chronic rheumatism, 256.
 Chyle, 88.
 Cilia in the lungs, 172.
 Ciliary muscle, 272.
 Circulation, 129; lymphatic, 134; in late life, 441; artificial, 338. H, 590.
 Clap, *see Gonorrhœa*.
 Claws, B, deformed, 921.
 Cleveland Bays, 515.
 Clinical thermometer, 35.
 Clipping, H, 725.
 Clothing, in health, 483; for babes, 429; for the aged, 447. H, 724.
 Clover for horses, 718.
 Clover sickness, O, 737.
 Clydesdale horses, 515.
 Coat of horse, 539.
 Coated tongue, 36.
 Cochlea, 297.
 Cock, sketch of, 866.
 Codfish broth, 474.
 Coffee, 149.
 Coffin bone, H, 666.
 Cold, in the head, 174; epidemic, 186; in the eye, 278; in the ear, 309; neglected, 316. H, 601. O, 752. S, 797. D, 838. P, 886. B, 918.
 Cold-sore, 200.
 Colic, 104; in pregnancy, 406. H, 563, 583. O, 744, 745. S, 795. Hg, 815. D, 834.
 Collar-galls, H, 629.
 Collisions, 346.
 Colt-trotting, 535.
 Comb, white, P, 899.
 Compositor's cramp, 72.
 Compresses, 464.

- Concretions, H, 575.
 Concussion of the brain, 347.
 Confinement, 409.
 Constipation, 105; in convalescence, 106; in pregnancy, 402; after delivery, 415; in late life, 440. H, 578. O, 747. S, 804. D, 834. C, 854. P, 892. B, 921.
 Consumption, 174, 188. H, 611. O, 754. S, 797. C, 861. P, 887. B, 918.
 Conversation-tubes, 317.
 Convulsions, of infants, 56; of others, 349. H, 540. O, 733. C, 858.
 Cookery, 483.
 Coop for poultry, 868.
 Corn for horses, 721.
 Cornmeal gruel, 473.
 Corns, 202. H, 671.
 Coryza, 186. H, 601. O, 752.
 Cosmetics, 477.
 Costiveness, *see Constipation*.
 Cough, varieties, 173. H, 598. S, 797. D, 840. P, 886.
 Cow-hocked, H, 655.
 Cow-pox, 769.
 Crack in the hoof, H, 672.
 Crack in the skin, O, 758.
 Cracking of the nipples, 419.
 Cramp, of writers, type-setters, etc., 72; in the water, 338; in the muscles, 350; in the heart, 169; in the bowels, *see Colic*; during pregnancy, 405. H, 693. P, 895.
 Cranial-nerves, 47.
 Crib-biting, H, 581.
 Crop-bound, 891.
 Croup, spasmodic, 183; membranous, 178, 179, 244. P, 880.
 Crusta lactæa, O, 760.
 Crying of babes, 422, 433.
 Cud, O, 736; loss of, 741. S, loss of, 804.
 Curb, H, 655, 678.
 Cuts, dressing, 327; care, 328; bandages, 329. H, 706. O, 787. S, 804. D, 846. P, 903.
 Cysts, ovarian, 389.
 Cysts, O, in the skin, 759.
 Damp in wells, etc., 344.
 Dancing, 485.
 Dandruff or dandriff, 196, 478.
 Darley line, 506.
 Deafness in children, 301. H, 651. D, 845.
 Debility, P, 895.
 Deformities, P, 902. B, 923.
 Delirium, C, 858.
 Delirium tremens, 70.
 Dentition, 90.
 Dexter, 504.
 Diabetes, 216. H, 636. O, 765.
 Diaphragm, 172. H, spasm of, 592, 615.
 Diarrhœa, 108; in pregnancy, 403; after delivery, 415. H, 567. O, 746, 747. S, 794. C, 860. P, 892. B, 921.
 Diet, errors in, 470; effect on the heart, 146; in pregnancy, 395; after delivery, 414.
 Digestion, 85; in late life, 439. H, 541, 558. O, 735.
 Dilutions, 926.
 Diphtheria, 242. C, 859. P, 889.
 Diseased cattle, 787.
 Diseases, signs of, 34. H, O, S, Hg, and D, 539, 679. P, 871, 878.
 Disinfectants, 457.
 Dislocations, 353. H, 711. O, 787. S, 804.
 Distemper, H, 690. O, 779. D, 830. C, 861.
 Disturbances of the sick, 458.
 Dizziness, 52, 349. O, 734. B, 920.
 Dog, bites of, 332; breeds, 821; uses, 821; traits, 819; origin, 819; diseases, 827; care, 827.
 Doses, 926; size, 926; frequency, 928; alteration, 929; of particular remedies, 930 ff; for children and domestic animals, 927.
 Douches, 174, 310.
 Douglass Mixture, P, 875.
 Drainage, 491.
 Draught horses, 514.
 Dried-beef gravy, 474.
 Drinking-water, 489.
 Driving as a recreation, 485.
 Dropsy, 258. H, 697. O, 760, 781. S, 804. D, 846.
 Drowning, prevention, 338; rescue from, 339; restoration, 339.
 Druggists' weights and measures, 928.
 Drunkenness, *see Alcoholism*.
 Dry-earth closet, 492.
 Dry murrain, O, 738, 779.
 Ducks, 867.
 Dumb braxy, S, 802.
 Duodenum, 88. O, 736.
 Dust-balls, O, 751.
 Dutch horses, 515.
 Dysentery, 110. H, 569. O, 746. S, 794. Hg, 816. D, 834. C, 860. P, 892. B, 921.
 Dysmenorrhœa, 377.
 Dyspepsia, 100. H, 579. P, 889.
 Ear, anatomy and physiology, 293; diseases, 300; discharges from, 313; ringing in, 315; inflammation, 305; polypus in, 267; foreign bodies in, 307, 351; hardened wax, 306; eczema, 303; probing, 307. H, 645, 651. O, inflammation, 786. D, disorders of, 844. C, 855. P, mottled, 899.
 Earache, 304-317.
 Ear-drum, 295, 298; artificial, 317.
 Ear-trumpets, 317.
 Ear-wax, hardened, 306.

- Eczema, 199; of the ear, 303. D, 841. C, 862.
 Egg and alum poultice, 464.
 Egg-bound, P, 904.
 Egg-eating, P, 906.
 Egg-food for birds, 914.
 Eight-tailed bandage, 604.
 Elbow, capped, H, 659.
 Elephantiasis, P, 896.
 Emergencies, 318 ff; cautions in, 318.
 Emetics, 467; in poisoning, 358. H, 567. O, 737.
 Emmetropia, 284.
 Emotions, excessive, 350.
 Endocarditis, *see Inflammation of the heart*. H, 593.
 Enteritis, *see Inflammation of the bowels*.
 Entertainments for the sick, 457.
 Epiglottitis, 170.
 Epilepsy, 55, 495. H, 548. S, 792. Hg, 814. D, 832. B, 920.
 Epizootic, H, 686.
 Eruptions, 195. H, 621. O, 758.
 Erysipelas, 250. H, 628. O, 762. Hg, 816.
 Excoriations of babes, 423.
 Exercise, effect on the heart, 155; excessive, 485. H, 724. D, 827.
 Eye, an index of disease, 36; anatomy and physiology, 270; diseases, 276; inflamed, 277; injuries, 280; foreign bodies in, 280, 350; inflammation in babes, 422; hygiene, 289. H, inflammation, 645, 646; polypus and warts on, 650, 651. O, inflammation, etc., 785. D, disorders of, 844. C, inflamed, 859. P, 889. B, 922.
 Eyeball, shapes of, 286.
 Eyelids, inflamed, 277; granular, 278. H, inflamed, 650, 651. O, 785.
 Face, signs of disease, 34; paralysis of, 62. P, mottled, 899.
 Fainting, 345; in pregnancy, 407.
 Falling of the womb, 385.
 Falling sickness, 55.
 Fallopian tubes, 373.
 Falls, 346.
 False cholera, Hg, 810.
 False quarter, H, 673.
 False waters, 495.
 Family resemblances, 494.
 Farcy, 693.
 Farmers' wives, insane, 486.
 Far-sight, 287.
 Fatness, B, 922.
 Fatty hearts, 148.
 Feather-eating, P, 906.
 Feeding, of babes, 428; change of, 428; of the sick, 472.
 Feet, care of, 480; offensive, 480. H, nail in, 676; founder, 667; fever, 667; ulcerated, *see Quittor, Thrush, etc*; care of, 726. B, sore, 922.
 Felon, 203.
 Festering sores, *see Cuts, Boils and Abscesses*.
 Fetlock, H, sprain of, 661.
 Fever, bilious, 228; gastric, 228; hay, 184; intermittent, 228; remittent, 228; scarlet, 239; simple, 225; typhoid, 226; typhus, 226; yellow, 230; brain, 59; puerperal, 415. H, brain, 544; cerebro-spinal, 550; nervous, 551; scarlet, 682; simple, 679; splenic, 698; typhoid, 679, 681. O, acclimating, 779; brain, 731; gastric, 779, inflammatory, 771; milk, 775; nervous, 773; periodic, 779; simple, 771; Spanish, 779; splenic, 773, 779; Texas, 779. S, 804. Hg, brain, 814; intestinal, 809. D, inflammatory, 836; nervous, 837; putrid, 837.
 Fever and ague, 228.
 Fever blister, 200.
 Fever thermometer, 35.
 Fevers, remarks upon, 225.
 Filth in hogs, 807.
 Finches, food for, 917.
 Fire in the clothing, 335.
 Fire-arms, wounds by, 337.
 Fistula, H, of salivary glands, 589, 678; of withers, 702; of nose, 704.
 Fits, 55, 349; of infants, 56. H, 549. O, 732. S, 792. Hg, 816. C, 858.
 Flaxseed poultice, 464.
 Fleas, D, 842. C, 864.
 Fledging, P, 900. B, 923.
 Flemish horses, 515.
 Flesh, B, loss and excess of, 922.
 Flesh-food, effects of, 147.
 Flooding, after delivery, 413. H, 641. O, 765.
 Fluke disease, O, 751. S, 795.
 Flukes, O, 751. S, 795.
 Flux, bloody, *see Dysentery*.
 Fly in the nose, S, 799.
 Fly paper, poisoning by, 362.
 Foaling, difficult, 640.
 Fomentations, 465. H, 606.
 Food, 483; for babes, 114, 424-428; for the sick, 470. H, 718 ff. Hg, 808. D, 827. C, 853.
 Foot, H, anatomy, 666, 727. D, sore, 842.
 Foot and mouth disease, 739, 781. Hg, 808, 809. P, 871.
 Foot-ball, bad effects, 148.
 Foot-founder, H, 667, 669. O, 783.
 Foot-rot, O, 783. S, 800.
 Formulas 941, ff.
 Foul, H, 639.
 Founder in the feet, H, 667, 669.
 Four-year-old trotting, 537.
 Fractures, 352. H, 712. O, 787. S, 804. D, 816, 846. C, 864. P, 903. B, 924.
 Framework of the body, 25.
 Freckles, 196.
 Freezing, 348.

- French Commission, 719, 720.
 Frenzy, Hg, 814.
 Fright, 35.
 Frog of foot, H, 666.
 Frog-felon, 203.
 Frost-bite, 201, 303, 348. P, 901. B, 924.
 Fruit diet in pregnancy, 396.
 Fungous growths, O, 759.
 Fur, C, care of, 855.

 Gall-bladder, 87.
 Galls, H, of saddles, etc., 629.
 Gall-stones, 121.
 Gapes, P, 883.
 Gape-worms, P, 895. B, 919.
 Gargles, 467, 943.
 Gas, suffocation by, 344.
 Gastralgia, 68.
 Gastric fever, 228.
 Gastritis, *see Inflammation of the Stomach*.
 Geese, 867.
 Generative organs, 223. H, 543, 631. O, 763.
 Genital organs, 223.
 Giddiness, 52. O, 734. S, 791.
 Glanders, 690.
 Glass, cuts by, 331.
 Gleet, nasal, H, 615.
 Gloss anthrax, O, 740, 774.
 Goat, the, 791.
 Godolphin line, 510.
 Goitre, 263. O, 761. S, 799.
 Goldsmith Maid, 520.
 Gonorrhœa, H, 639. O, 769. D, 846.
 Graham mush, 475.
 Grain sickness, O, 737.
 Granular eyelids, 278.
 Granulations in sores, 326.
 Grass as food, H, 718. C, 854.
 Grass staggers, O, 738.
 Gravel, 214.
 Gray Games, P, 873.
 Grease, H, 620, 678, 683, 695.
 Green sickness, 381.
 Grief, effects on the heart, 114.
 Gripes, *see Colic, Diarrhœa, Dysentery and Enteritis*.
 Grocer's itch, 199.
 Grooming, 723.
 Grunter, H, 614.
 Guinea-fowls, *see Poultry*.
 Gullet, 87. H, stricture of, 590.
 Gum-Arabic water, 473.
 Gum-boils, 92.
 Gums, inflammation, scurvy, spongy and bleeding, 92.
 Gymnastics, effects of, 147.

 Hæmorrhage, *see Bleeding*.
 Hæmorrhoids, 117.
 Hafiz, 857.
 Hair, care of, 478; thinning, 196, 478.
 Hair-balls, O, 751.
 Hair-dyes and invigorators, 479.
 Hands, care of the, 480; chapped, 208.
 Handsome Tom, 848.
 Hanging, 343.
 Hartshorn, poisoning by, 365.
 Hay for horses, 718.
 Hay-asthma, 184.
 Hay-fever, 184.
 Head, O, water and insects in, 785. S, water in, 793. P, sore, 888, 889.
 Headache, varieties, 50, 52.
 Healing of wounds, 325.
 Health, signs of, 34-41. H, O, S, Hg, and D, 539, ff.
 Hearing, physiology of, 297; aids to, 317.
 Heart, anatomy and physiology, 130; care of, 136; derangements of, 77, 138, 162; palpitation, 63, 77; cramp, 166; influence of mind on, 140; of diet, 146; fatty, 148; broken, 157; of children, 161; of the aged, 442. H, dropsy, 592; dilatation, 594; enlargement, 594; inflammation, 593; wasting, 594.
 Heart-burn, 103.
 Heart-cramp, 166.
 Heart-disease, two kinds, 162, 164.
 Heating appliances, 488.
 Heaves, H, 613.
 Heel, H, chapped and cracked, 624.
 Hen distemper, 878.
 Hereditary tendencies, 494.
 Heredity and marriage, 494.
 Herniæ, *see Ruptures*.
 Herpes, 200.
 Hiccough, H, 592, 615.
 Hide-bound, H, 627. O, 762.
 Hinda Rose, 529.
 Hip-bath, 469.
 Hip-joint disease, 269.
 Hives, 249.
 Hoarseness, P, 880. B, 918.
 Hock, H, capped, 657, 658; sprained, 658. P, cracked, 903.
 Hog, skeleton, 806; anatomy and physiology, 807; feed and care, 807.
 Home nursing, 451, ff.
 Homesickness, effects of, 144.
 Hoof, H, contraction of, 674; crack in, 672.
 Hoof-bound, H, 674.
 Horns, O, broken, 787.
 Horse, Arabian, 503; prehistoric, 511; in history, 502; modern, 503; thoroughbred, 506; racers, 512; draught, 514; skeleton, 538; health and disease, 539, 679; anatomy and physiology, 538, 539, 632; sketch, 620; proportions, 714, 715; care, 713, ff.
 Household remedies and appliances, 929.
 Hunger, *see Starvation*.
 Hydrocephalus, 64, 258. S, 793.
 Hydrothorax, 258.

- Hydrophobia, 71. H, 552. O, 732. S, 792. D, 828.
- Hygiene, 476. H, 713. Hg, 807. D, 827. C, 853. P, 868. B, 910.
- Hypermetropia, 287.
- Hypochondria, 75, 78, 494.
- Hysteria, or hysterics, 59, 75, 383, 494.
- Idiocy, 494.
- Index of poisons, 359.
- Indian meal poultice, 646.
- Indigestion, 100. H, 579. O, 742. D, 832. P, 889.
- Infants, *see Babe*.
- Infection in the sick-room, 460.
- Inflammation, *see Brain, Bowels, Lungs, Eye, etc.*
- Inflammatory fever, O, 771. D, 836.
- Influenza, 186. H, 686. P, 880.
- Infusions, 926.
- Inhalations, 190.
- Inherited diseases, 494.
- Injections, 107, 411, 466.
- Injured, carrying the, 356.
- Injuries, 318. H, 679. O, 771, 787. Hg, 816. D, 846. C, 864. P, 902. B, 923.
- Insanity, among farmers, 486; inherited, 495. H, 553.
- Insects, bites and stings, 334.
- Interfering, H, *see Brushing and Speedy Cut*.
- Intertrigo, 201; of the ear, 304.
- Intestinal juice, 88.
- Intestines, 87, 89; disorders of, *see Bowels*.
- Iritis, 280.
- Itch, 198. H, 625. O, 760. Hg, 816. D, 842. P, 897.
- Itching of the genitals, 125, 406.
- Itching of the mane, H, 626.
- Ivy, poisoning by, 334.
- Jaundice, 28. O, 748.
- Jaw, open joint, H, 707; caries, 586.
- Jay-Eye-See, 513.
- Jelly-water, 473.
- Johnston, H, 537.
- Joint-oil, H, 652.
- Joints, 119; dislocated, 353. H, 652; inflammation, 652; ulcerated, 657; open, 675. O, open, 787; swollen, 784; dislocated, 711. S, swollen, 800.
- Jumping, effects of, 147.
- Kidneys, physiology, 210; in late life, 440. H, 632; inflammation, 631. O, inflammation, 763, 765. D, inflammation, 843.
- Kittens, new-born, 863.
- Knee, H, capped, 658; broken, 659; sprained, 659. O, sponge on, 759.
- Koumiss, 83, 191.
- Kumyss, *see Koumiss*.
- Labor, signs and stages, 410.
- Labyrinth, 296, 299.
- Lacerations, 330.
- Lacteals, 89.
- Lady Thorn, 506.
- Lambing, 801.
- Lameness, H, *see Quittor, Sprains, etc.* P, 903.
- Laminitis, H, 667.
- Lampas, 588.
- Lancet, 181.
- La Porte's Proportions, 714, 715.
- Lark, food for, 917.
- Laryngitis, *see Inflammation of the Larynx*.
- Larynx, 170; inflammation, 179. H, inflammation, 605.
- Leaping, effects of, 147.
- Leg-weakness, P, 895.
- Lemonade, 473.
- Leprosy, Hg, 812.
- Leucorrhœa, 380.
- Lice, H, 626. O, 760, 761. S, 798. Hg, 816. D, 842. P, 870, 900. B, 923.
- Ligaments, 28.
- Light, effect on body, 453. P, 869. B, 912.
- Lightning, stroke of, 343.
- Lights, rising of, Hg, 813.
- Lime, burning by, 337.
- Lime-water, 472; *see Formulas*.
- Lincolnshire Blacks, 515.
- Linnets, food for, 917.
- Linseed poultice, 464.
- Liver, 87; inflammation, 120; in late life, 439. H, 632; inflammation, 572. O, inflammation, 748; worms in, 750; flukes in, 751. S, inflammation, 795; flukes in, *see Rot*. D, inflammation, 835. P, disease of, 890. B, 920.
- Liver complaint, *see Liver*.
- Liver disease, *see Liver*. P, 890.
- Liver spots, B, 920.
- Lochia, 414.
- Lock-jaw, 70, 149. H, 554. O, 733. S, 793. Hg, 814.
- Long-sight, 287.
- Loss of cud, O, 740. S, 804.
- Lotions, 926; *see Formulas*.
- Low spirits, *see Nervous Exhaustion*.
- Lumbago, *see Rheumatism*.
- Lungs, 171; inflammation; *see Pneumonia*; consumption, 180. H, congestion, 607; consumption, 611; inflammation, 602, 608. O, inflammation, 754. D, inflammation, 840.
- Lying-in chamber, 410.
- Lymph, 134; in healing, 326.
- Lymphatics, 135.
- Macena Biscuit, for birds, 914.
- Mad dogs, bites of, 332. *See Madness*.
- Madness, 71. H, 552. O, 732. S, 792. Hg, 814. D, 828.

- Mad staggers, H, 545. O, 731. Hg, 814.
 Maggots, O, in the flesh, 761. S, 799.
 Maid and wife, 373.
 Maidenhood, 372.
 Mallanders, H, 627, 678.
 Mammary abscess, 417.
 Mane, H, itching, 626.
 Mange, H, 625. O, 760. Hg, 816. D, 842. C, 862.
 Maniples, O, 735.
 Marasmus, O, 748, 760.
 Marriage, 393, 494.
 Marshall Hall's Ready Method, 339.
 Massage, 485.
 Mastoid cells, 296.
 Materia Medica, 925 ff.
 Maternity, 394, 424.
 Maturity, 435 ff.
 Maud S, 400.
 Measles, 238. Hg, 812.
 Measures, apothecaries' and for the home, 928.
 Medicine chest, 929.
 Medicines, *see Remedies*; poisonous, 357.
 Medulla oblongata, 45.
 Megrims, H, 549. P, 894.
 Melancholy, *see Nervous Exhaustion*.
 Membranous croup, 178.
 Memory in late life, 445.
 Menorrhagia, 376.
 Menses, 373, 374, 390; *see Menstruation*.
 Menstruation, 373; delayed, 375; excessive, 376; suppressed, 377; painful, 377; absence of, 394; cessation of, 374, 390.
 Mental recreation, 486.
 Mental traits, inherited, 496.
 Michigan Method in drowning, 341.
 Milk, for the babe, 114, 424-426. O, diseased, 788. Hg, and P, as food for, 808.
 Milk fever, O, 775. S, 801.
 Milker's cramp, 72.
 Milk-scab, O, 760.
 Miscarriage, 407. H, 640. O, 767. S, 801.
 Mites, red, P, 870, 901. B, 923.
 Mocking-bird, food for, 915.
 Molars, 86.
 Moon-blindness, H, 646.
 Moor-ill, O, 743.
 Moral traits, inherited, 496.
 Morning sickness, 394, 400.
 Morphine, 83.
 Mother, the, 393; fashionable, 424; advice of, 374.
 Mottled face and ears, P, 899.
 Moulting, P, 900. B, 923.
 Mouth, inflammation, 95; canker, 96; in health 479. H, inflammation, 585; sign of disease, 541. O, ulcerated, 739. S, black, 794; ulcerated, 793. D, canker, 832. P, canker, 888.
 Movements, Swedish, etc., 485.
 Mule, the, 539.
 Mumps, 95. H, 684.
 Murrain, O, dry, 738; bloody, 774; 776; lung, 756; yellow, 779.
 Muscles, structure, etc., 29; twitching, 77; cramp, 338.
 Musician's cramp, 72.
 Mustard poultice, 464.
 Myopia, 284.
 Nails, care of the, 480.
 Nails in the flesh, 331. H, 676, 706.
 Nasal catarrh, 174. H, 601. O, 752. S, 797. D, 832. C, 859. P, 886. B, 918.
 Nasal gleet, H, 615.
 Navel of babes, 421.
 Navicular bone, H, 666.
 Navicular disease, H, 666.
 Near-sight, 284.
 Nephritis, *see Bright's Disease*.
 Nerve-ganglion, 45.
 Nerves, structure, etc., 46.
 Nervous centers, 45.
 Nervous exhaustion, 75.
 Nervous fever, H, 551. O, 773. D, 837.
 Nervousness, 75.
 Nervous system, anatomy and physiology, 42-50; in late life, 441. H, 541, 544. O, 731.
 Nettle-rash, 249.
 Nettles, poison by, 334.
 Neuralgia, varieties of, 68.
 Neurasthenia, 75.
 Nightingale, food for, 916.
 Nightmare, 72.
 Nipples, cracked and ulcerated, 479; in pregnancy, 401; in babes, 423.
 Norman horses, 515.
 Nose, polypus in, 267; foreign bodies in, 351; bleeding of, 182. H, fistula in, 704; polypus in, 619. S, dry in, 799.
 Nose-bleed, 182. H, 618.
 Notes of the nurse, 459.
 Nurse, the, 451, ff.
 Nursery, 431.
 Nursing, in the home, 451, ff.; of babes, 424, ff.
 Oatmeal gruel and porridge, 474, 475.
 Oatmeal-water, 473.
 Oats for horses, 720.
 Oesophagus, 87.
 Ointments, 926; *see Formulas*.
 Old age, 438-450; conditions of the body, 438-441; disorders, 446; care, 446, ff.
 Old-sight, 288.
 Omasum, O, 735.
 One-year-old trotting, 537.
 Onychia, 203.
 Open joints, H, 675.
 Ophthalmia, catarrhal, 278; purulent, 279. D, 844.
 Opium, 83.

- Origin, H, 510; trotting, 517. D, 819. C, 849.
 Original trotter, 516.
 Ovarian tumors or cysts, 389.
 Ovaries, 373; inflammation, 388. P, 904.
 Ovaritis, 388.
 Overheating, 63, 343.
 Overreach, H, 664.
 Overwork, H, 712.
 Oviduct, P, 904; inflammation, 904; protrusion, 905.
 Ovulation, 373. P, 904.
 Ox, the, 729; skeleton of, 730; sketch of, 730; points of, 730; stomach, 735.
 Pacers, origin of trotters, 524; records, 537.
 Pacing, 537.
 Packs for the sick, 469.
 Pairing-fever, B, 922.
 Palpitation of the heart, 63, 77. H, 591.
 Palsy, 62.
 Pancreas, 87.
 Pancreatic juice, 88.
 Paralysis, 62. H, 547. O, 732. S, 792. Hg, 816. D, 831. P, 894.
 Parasites, *see Worms and Lice*.
 Paregoric, poisoning by, 357.
 Paris green, poisoning by, 357.
 Parrot, food for, 917.
 Parturition, 408. H, 640. O, 766, 775. S, 801.
 Patients, care of, 451, ff.
 Paunoh, O, 758.
 Peas for Horses, 720.
 Pedestrianism, effects of, 147.
 Peerless, 525.
 Penis, H, protrusion of, 643; clogged, 643.
 Perfect Pile Cure, 119, 128.
 Pericardium, 130.
 Period of pregnancy, 399.
 Peritonitis, 122, 123. H, 573. O, 750.
 Pharyngitis, H, 607.
 Pharynx, H, inflammation, 607.
 Physic, by oil, etc., 105.
 Physiology, importance of, 25.
 Pigeon-breast, 264.
 Pigment, of the eye, 272; of the skin, 194.
 Piles, 117; in pregnancy, 403. H, 575. O, 751.
 Pillows for the sick, 455.
 Pimples, H, 621; *see Eruptions*.
 Pink-eye, H, 688.
 Pip, P, 887.
 Pitchfork wounds, *see Stabs*. H, 706.
 Pleura, 171.
 Pleurisy, 182. H, 612. O, 754, 757. D, 840.
 Pleurodynia, 252.
 Pleuro-pneumonia, 756.
 Pneumo-gastric nerve, 48.
 Pneumonia, 180. H, 608. S, 797. Hg, 813. D, 840.
 Poisoning, 356-371; children's medicines, 357; antidotes and emetics, 358; arsenic, carbolic acid, camphor, chloral, copperas, indigo, fly-paper, green vitriol, laudanum, lead, matches, morphine, mushrooms, opium, Paris green, peach-pits, potash, quick-silver, rat's-bane, saltpetre, soda, soothing syrups, strychnine, sumac, tartar emetic, toadstools, tobacco, wild-cherries, etc., etc., *see Index of Poisons*, 359-361; of wounds, 327. H, 571. O, 786. P, 902.
 Poisonous medicines, 357.
 Poisons, index of, 359; cautions, 357; *see Poisoning*.
 Polish fowls, 898.
 Poll-evil, H, 678, 704.
 Polypus, 267. H, in the nose, 619.
 Pores, 195; clogging, 476.
 Potash, burning by, 337.
 Poultices, 463.
 Poultry, care and treatment, 867, ff.
 Pox, O, 769. S, 802. C, 863. P, 897.
 Precautions in sickness, P, 874.
 Pregnancy, signs of, 394; habits during, 395-398; cheerfulness in, 398; period of, 399; albuminuria during, 398; disorders of, 400, ff; medical advice, 398.
 Presbyopia, 288.
 Private diseases, 223.
 Privates, *see Genital Organs*.
 Proud flesh, 326.
 Prurigo, H, 622.
 Pruritis, 406.
 Pterygium, H, 650. D, 846.
 Pudenda, O, inflammation, 801.
 Puerperal fever, 415. O, 801.
 Pugilism, effects of, 147.
 Pulmonary arteries, 129.
 Pulse, its indications, 37, 134; at different ages, 37; in wrist, groin, neck and temple, 320. H, 540.
 Pumiced feet, H, 669.
 Punctured wounds, 331.
 Pupil of the eye, 272.
 Purgatives, 105.
 Purging, 108.
 Purpura hæmorrhagica, H, 699.
 Pus and lymph, 326.
 Pustules, O, 758.
 Putrid fever, D, 837.
 Quarter, false, H, 673.
 Quickening, 394.
 Quinsy, 176. Hg, 810. P, 880.
 Quittor, H, 665, 678.
 Rabies, 71. H, 552. O, 732. S, 792. D, 828.
 Race horses, 506, 514.
 Rash, nettle, 249; scarlet, 249.
 Raw meat, worms in, 127, 266.
 Reading to the sick, 457; in health, 291.
 Recreation, mental, 486.

- Rectum, polypus in, 267; protrusion, 127.
 O, protrusion, 750. Hg, protrusion, 816.
 D, protrusion, 846.
 Red, shooting the, turkeys, 900.
 Red-bird, food for, 916.
 Red mites, P, 901. B, 923.
 Red-water, O, 743, 764, 779. S, 804.
 Remedies, choice of, 925; decoctions, dilutions, doses, infusions, solutions, triturations and washes, 926; cerates, liniments, lotions and ointments, 926, 942-945; in the sick-room, 462. P, 874.
 Respiration, an index of disease, 38; organs of, 170; artificial, 359. H, 542; organs of, 598. O, organs of, 752. S, organs of, 797.
 Respiratory organs, *see Respiration*.
 Reticulum, O, 735.
 Retina, 273.
 Rheumatism, 250; chronic, 256; acute or inflammatory, 252. H, 691. O, 780. S, 804. P, 895.
 Rickets, 264.
 Rinderpest, 739, 777, 778.
 Ringbone, H, 674, 678.
 Ringworm, H, 627. O, 762. C, 862.
 Rising of the lights, Hg, 813.
 Roaring, H, 614.
 Robin, food for, 916.
 Rob Roy, 818.
 Roots for horses, 718.
 Rot, S, 795. P, 899.
 Roup, P, 880.
 Rowing, effects of, 147.
 Rumen, O and S, 735.
 Rumination, O and S, 736.
 Rump-gland, B, obstruction, 922.
 Running, 147, 159, 485.
 Run-round, 205.
 Rupture, 354. H, 576. O, 787. Hg, 816. B, 921.
 Russian cattle plague, 777.
 Rysdyk's Hambletonian, 579.
 Saddle-galls, 629, 678.
 Salivation, H, 588. D, 832.
 Salivary calculi, H, 589.
 Salivary fistula, H, 589.
 Salivary glands, 86.
 Salivation, 92.
 Sallenders, H, 627.
 Salt-rheum, 199; of the ear, 303.
 Salt-towels, 193.
 Sandcrack, H, 672, 678.
 Scab, S, 797.
 Scabies, 193.
 Scald-head, 199.
 Scalds, 335. D, 846.
 Scaly legs, P, 896.
 Scarletina, 249.
 Scarlet fever, 243, 249, 259. H, 680.
 Scarlet rash, 249.
 Schlerotic coat, 271.
 Sciatica, 252.
 Scouring, H, 567. O, 746.
 Scratches, H, 622.
 Scrofula, 260.
 Scurfy skin, P, 899.
 Sea-bathing, 478.
 Seamstress' cramp, 72.
 Sea-sickness, 53.
 Sea-water, artificial, 478.
 Sedentary habits, 485.
 Seedy toe, H, 669.
 Semi-circular canals of the ear, 296.
 Sewers, 345, 492.
 Sex, 373.
 Sheep, the, 789, ff.
 Sheep-pox, 802.
 Shins, sore, H, 673.
 Shock, 346.
 Shoeing, H, 727.
 Shoes, proper kinds, 480.
 Shooting the red, turkeys, 900.
 Shoulder-lameness, H, 710.
 Sick, care of the, 451, ff.
 Sick-headache, 51, 76.
 Sickness at the stomach, 103.
 Sick-room, air and warmth, 451; disinfectants, 453, light, 453; the bed, 454; furniture, 455; adornments, 455, 456; cleanliness, 456; watching, 457, 460; entertainment, 457; disturbances, 458; notes, 459; precautions against infection, 460; visits, 461; remedies, 462; food, 470; baths, 467; packs, 467; compresses, 464; poultices, 463; fomentations, 465; massage, 466; injections, 466; emetics, 467; gargles, 467.
 Sidebone, H, 674.
 Sight, *see Vision*.
 Siskin, food for, 917.
 Sitting-fever, P, 906.
 Skeleton, 26, 27. H, 538. O, 730. Hg, 806.
 Sketch, H, 620. O, 730. P, 866.
 Skin, anatomy and physiology, 194; care, 476; in late life, 440; vermin in, 477.
 Sleep, in health, 481; in late life, 444; in infancy, 430; loss of, 72; after meals, 482.
 Sleeping-apartments, 482; for the aged, 445.
 Sleeplessness, 72; in late life, 445.
 Sleepy staggers, H, 545, 546.
 Sling, for the arm, 352. H, 662.
 Slippery-elm poultice, 464.
 Slobbers, H, 588. D, 832.
 Small-pox, 234, 237. H, 683.
 Smell, nerves of, 48.
 Snail-shell of the ear, 296.
 Snakes, bites of, 333.
 Sniffles, Hg, 813. D, 838. *See Snuffles*.
 Snuffles, of babes, 422. P, 880.
 Snuffs, 174.
 Sole of the foot, H, 666.
 Solutions of remedies, 926.

- Soothing syrups, 357, 430.
 Sore eyes, 277, ff. B, 922.
 Sore foot, D, 846. B, 922.
 Sore head, P, 880, 889.
 Sore teats, O, 768.
 Sore throat, 175. H, 685. O, 753. D, 838.
 C, 859. P, 880.
 Sorrow, effects of, 144.
 Sour stomach, *see Dyspepsia*.
 Spanish fever, O, 779.
 Spasms, 56. C, 858.
 Spavin, bog, 653; bone, 654, 678.
 Spaying, Hg, 816.
 Speed, ultimate, H, 524, 537.
 Spinal cord, 46; inflammation, 67.
 Spinsters, follies of, 448.
 Spleen, 87. O, inflammation, 749. S, inflammation, 804. Hg, inflammation, 816.
 Splenic fever, O, 773, 779.
 Splint, H, 662, 678.
 Sponge, O, 759.
 Spotted fever, 65.
 Sprains, 353. H, 709; hock, 658; knee, 658; fetlock, 661; stifle, 661. O, 787. S, 804.
 St. Anthony's fire, 250.
 St. Julien, 509.
 St. Vitus' dance, 57, 494.
 Stables, H, 725.
 Stabs, 331. H, 706.
 Staggers, H, *see Sleepy, Grass, Mad and Stomach Staggers*. O, grass, 738; mad, 731. S, 791. Hg, 814. P, 894.
 Staking, H, 708.
 Stammering, 58.
 Starch poultice, 464.
 Star-gazer, H, 549.
 Starling, food for, 917.
 Starvation, 349.
 Steaming-bag, 603.
 Stifle-joint, H, sprained, 661.
 Stings, 334. H, 630. O, 762.
 Stomach, 87; inflammation, 97; spasm, 98. H, 632; pain in, 583; inflammation, 570. O, 735; inflammation, 742. D, inflammation, 833. C, inflammation, 860. P, inflammation, 893.
 Stomach-ache, *see Dyspepsia and Vomiting*.
 Stomach staggers, H, 545, 547, 563, 581.
 Stone in the kidneys or bladder, 214. H, 637. O, 765.
 Stone-pock, 200.
 Strains, 354; *see Sprains*.
 Strangles, H, 690. O, 794. Hg, 810.
 Strangury, 211.
 Straw for horses, 719.
 Stretchers for the injured, 356.
 Strychnine, poisoning by, 361.
 Stuttering, 58.
 Sty on the eye, 276.
 Sty for hogs, 807.
 Suckling, of babes, 425.
 Suffocation, 344.
 Summer-complaint, 427.
 Sunburn, 196.
 Sunstroke, 63, 343.
 Suppuration, its prevention, 327.
 Surfeit, H, 692, 695. O, 762. D, 841.
 Swallow, the, 87. H, stricture of, 590.
 Swallowing, artificial, 359.
 Sweat malady, P, 906.
 Sweats, suddenly stopped, 108; excessive and offensive, 197.
 Swelling of the legs in pregnancy, 404.
 Swine-pox, 811.
 Swollen bones, O, 787.
 Swooning, 345.
 Sycosis, 198.
 Sympathetic nervous system, 49.
 Synovitis, H, 652.
 Table of horses' food, 722.
 Tail, H, itching of, 626. O, disease of, 784.
 Tan, 196.
 Tape-worm, 126. H, 577.
 Tapioca jelly, 475.
 Tartar emetic, poisoning by, 364.
 Taste, nerves of, 48.
 Tea, effects of, 150.
 Tears, 275.
 Teats, O, sore, 768. D, inflammation, 844.
 Teeth, growth and number, 85; irritation from, 309; aching, 90; in health, 479. H, 558-562; caries and irregularities, 587.
 Teething, 90, 309, 428. C, 860.
 Telegraphists' cramp, 70.
 Temperature of the body, 35.
 Tendons, 30.
 Test-tubes, 290.
 Tetanus, 70, 149. H, 554. O, 733. S, 793.
 Tetter, H, 627.
 Texas cattle plague, 778.
 Texas fever, O, 779.
 Theine, 150.
 Thermometer, 456; clinical, 35, 456.
 Thick-wind, H, 614.
 Thirst, an index of disease, 39.
 Thoracic duct, 134.
 Thorns, wounds by, 706.
 Thorough-pin, H, 652, 653.
 Three-year-old trotting, 537.
 Throat, sore, 175; polypus in, 267. H, sore, 685; swollen, *see Colds and Mumps*; pus in, 616. O, sore, 753. D, sore, 838. C, sore, 859.
 Thrush, 94. H, in the feet, 670; in the mouth, 586. O, 739. S, 804.
 Thrush, B, food for, 915.
 Thumps, H, 591.
 Ticks, S, 798. D, 842.
 Time-records, H, 517.
 Titmouse, food for, 916.
 Toast-water, 473.
 Tobacco, 151, 316, 495.

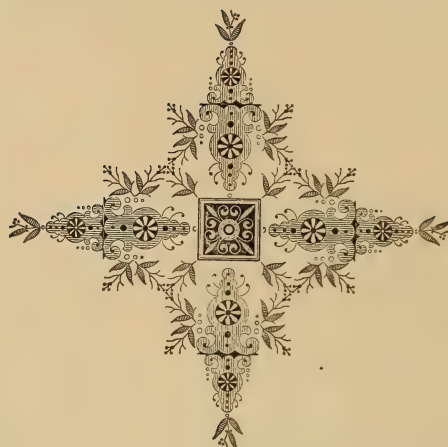
- Toe, seedy, H. 669.
 Toe-nail, ingrowing, 205.
 Tongue, index of disease, 36; ulceration, 97. H. 541; laceration, 708; inflammation, 585; hanging of, 590. O. black, 740; inflammation of, 740.
 Tonsil, enlargement, 176.
 Tonsillitis, 176.
 Toothache, 90. H. 587.
 Tourniquet, 321.
 Tread, H. 664, 678.
 Trichinae, *see* *Trichinosis*.
 Trichinosis, 266. Hg. 808.
 Triturations of remedies, 926.
 Trommer's tests, 218.
 Trotters, bred from pacers, 524, ff; breeds, 528; colts, 535.
 Trotting, origin, 517; speed, 524.
 Trusses, 442.
 Tubercles, O. 759.
 Tumor, ovarian, 389.
 Tumors, O. 759. D. 846. P. 897.
 Turkeys, 867.
 Turnip poultice, 464.
 Two-year-old trotting, 537.
 Tympanitis, O. 737. S. 794.
 Tympanum of the ear, 298.
 Typhoid fever, 226. H. 681.
 Typhus fever, 228. O. 746, 772.
 Udder, inflammation, H. 642. O. inflammation, 768. S. inflammation, 793.
 Ulceration, *see* *Mouth, Nipples, Womb, etc.*
 Ulcers, H. 702. O. 787.
 Unconsciousness, 346.
 Ureters, 210. H. 632.
 Urethra, H. inflammation, 643.
 Urinary organs, anatomy and physiology, 210, ff. H. 543, 631, 632. O. 763.
 Urination, difficult, 211, 213; involuntary, 212; in late life, 440; in pregnancy, 403, 415.
 Urine, index of disease, 39; tests for, 39, 40, 218; *see* *Urination*. H. 543; bloody, 638; scanty, 637; excessive, 636. O. bloody, 764; excessive, 765; retention of, 765.
 Urinometer, 40.
 Vagina, H. inversion, 641; inflammation, 642.
 Valves, of the heart, 130; of the veins, 131.
 Varicose veins, 168; in pregnancy, 407. H. 596.
 Veins, H. inflammation, 595; swollen, 596.
 Ventilation, 488; in sick-rooms, 451. H. 713. P. 869. B. 912.
 Vermica, 201.
 Vertigo, 52. H. 549. B. 920.
 Vestibule of the ear, 297.
 Vice, inherited, 496.
 Villi of the intestines, 89.
 Virtue, inherited, 496.
 Vision, disorders of, 276. H. obscured, 649.
 Visits to the sick, 461.
 Vomiting, 103; of blood, 98; in babes, 242; in pregnancy, 400; by emetics, 358. D. 833.
 Wakefulness, 72.
 Walking, effects, 485.
 Wall-paper, poisonous, 362.
 Warmth, for the aged, 447; artificial, 342.
 Warts, 201. H. 628. O. 758. D. 846.
 Washerwoman's itch, 199.
 Washes, 926; *see* *Lotions*.
 Watchers, notes of, 459; rules for, 451, ff.
 Water, for drinking, 489.
 Water on the brain, 64. O. 784.
 Water-braxy, S. 802.
 Water-crop, P. 890.
 Water-founder, H. 666.
 Weaning of babes, 424-428.
 Weed, H. 689, 695.
 Weights and measures, 928.
 Wells, near privies, 491.
 Wet-nurse, 425.
 Whirl-bone, H. dislocated, 711.
 Whisker dyes, 365, 479.
 Whistling, H. 614.
 White comb, P. 899.
 Whites, 380.
 Whitlow, 203.
 Whooping-cough, 182.
 Widows, imprudence of, 448.
 Wild Flower, H. 523.
 Wind, H. broken, 613; thick, 614.
 Wind-galls, H. 652, 653.
 Windpipe, 171. H. sounds in, 605.
 Wind-puffs, H. 653.
 Wind-sucking, H. 581.
 Withers, H. fistulous, 678, 702.
 Wolf-tooth, H. 587.
 Womb, 373; falling, 385; inflammation, 387; ulceration, 391. H. inversion, 641. O. falling, 767; inflammation, 766. D. protrusion, 846.
 Wood-evil, O. 743.
 Worms, in the bowels, 125; in the flesh, 266. H. in the skin, 630; in the bowels, 577. O. in the back, 761; in the bowels, 750; in the air-tubes, 755; in the liver, 751. S. in the bowels, 795. Hg. in the bowels, 815. D. in the bowels, 835. P. in the bowels, 893. B. in windpipe, 919.
 Wounds, 325-333; by nails, glass, etc., 331; by fire-arms, 337; by explosions, 337. H. contused, 705; incised, 706; punctured, 706; lacerated, 707; care of, 708. O. 787. S. 804. D. 846. P. 902.
 Yaws, P. 880.
 Yeast poultice, 464.
 Yellow fever, 230.
 Yellow hammer, food for, 917.
 Yellows, *see* *Faundice*. C. 861.

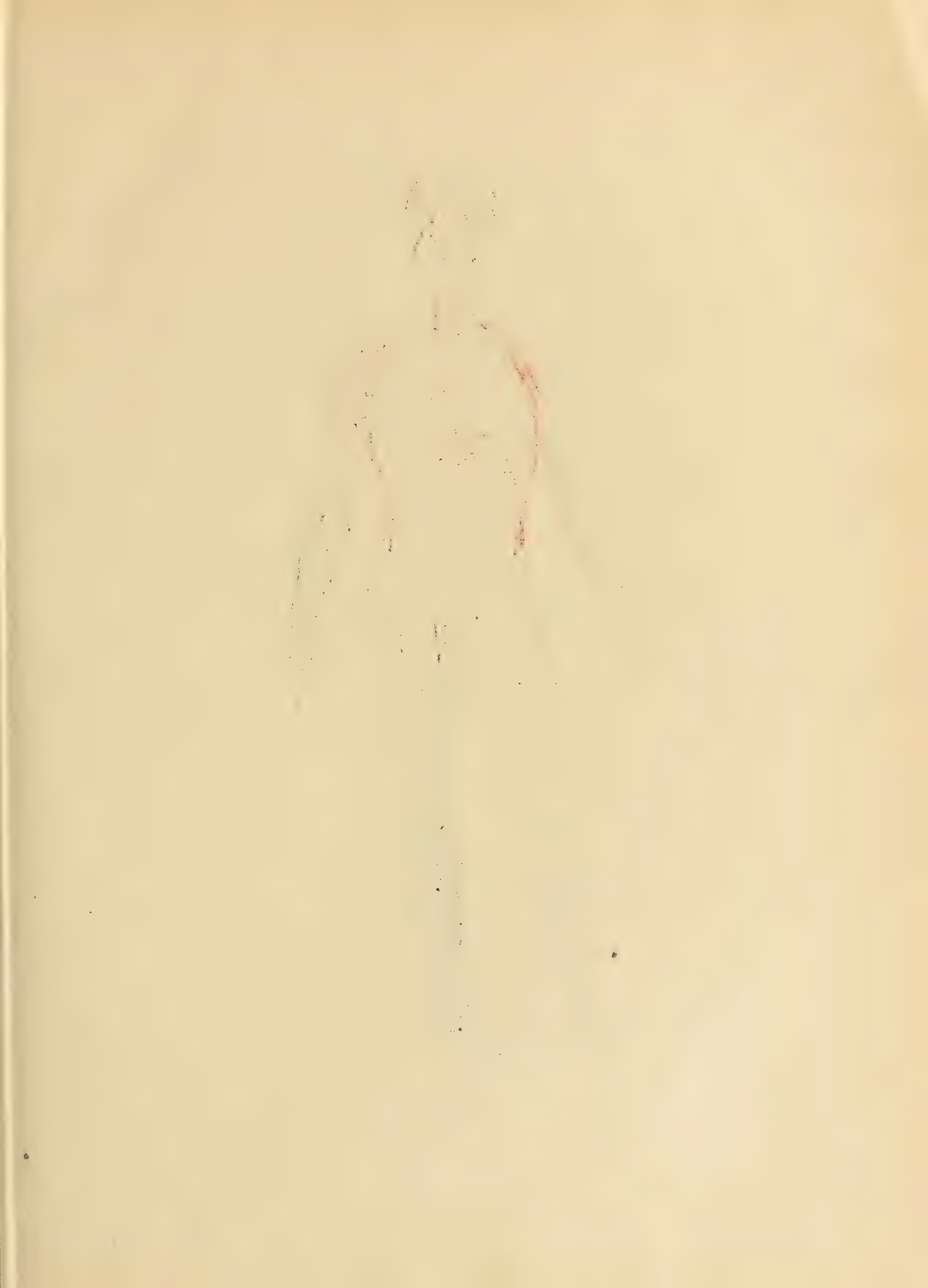


PART I.

MAN AND HIS DISEASES.









THE INTERNAL ORGANS.

COMPENDIUM OF HEALTH.

PART I.

MAN AND HIS DISEASES.

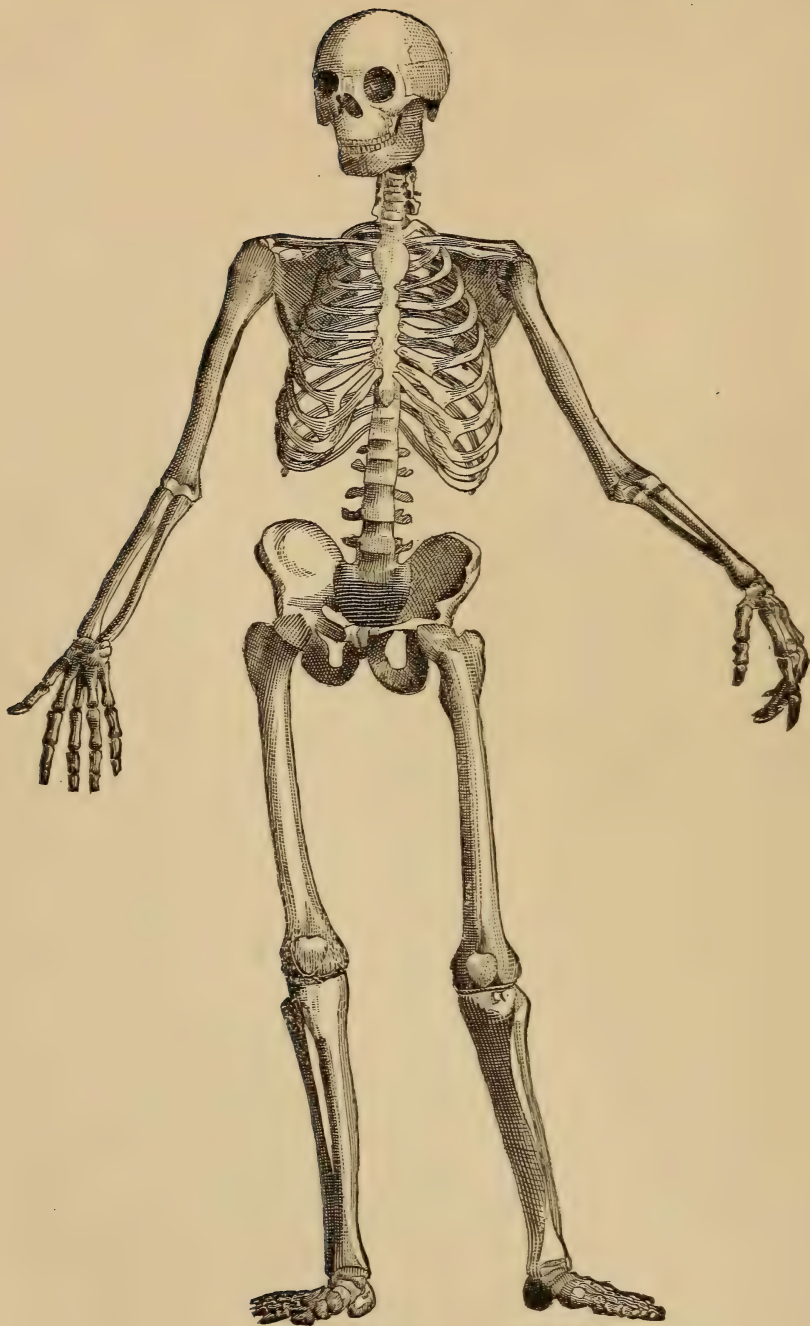
CHAPTER I.

THE FRAME-WORK OF THE BODY.

GENERAL REMARKS.

THE writer or lecturer on the human body is often surprised to learn how vague a knowledge the general reader or hearer has of his own wonderful mechanism. Though many talk familiarly of the organs upon whose constant action life itself depends, though they may be reasonably intelligent as to the promotion and maintenance of general health, there is a remarkable lack of information with reference, not only to the structure and offices of the parts of the human economy, but also to their general appearance, and even their location.

The authors of the present work, conscious of the proneness of writers to presume too much upon the reader's knowledge of subjects so familiar to themselves, will take pains, by description and illustration, to present a clear picture of the several parts of the body before advancing to the treatment of their diseases. Experience has shown that it is much easier to induce a patient to take needed treatment when he can see rational physiological reasons therefor, than when he is to act under the bare direction of a physician. The imparting of a clear outline of the main facts of anatomy and physiology is an important step toward the successful treatment of a patient. It is therefore sincerely hoped that this part of the book will be of great service to the profession, as well as in self-treatment.



1. THE HUMAN SKELETON.

TABLE OF THE SKELETON.

206 BONES.

THE HEAD—28 BONES.

THE SKULL, 8.

- 1 Frontal (forehead).
- 1 Occipital (back of head).
- 2 Parietal (side of head).
- 2 Temporal (temples).
- 1 Sphenoid ("like a wedge").
- 1 Ethmoid ("like a sieve").

THE TRUNK—54 BONES.

THE SPINAL COLUMN, 26.

- 7 Cervical Vertebrae (neck).
- 12 Dorsal Vertebrae (back).
- 5 Lumbar Vertebrae (loins).
- 1 Sacrum ("sacred").
- 1 Coccyx ("cuckoo-bill").

THE LIMBS—124 BONES.

THE UPPER LIMBS, 64.

- (32 on each side).
- 1 Clavicle ("key" or collar-bone).
- 1 Scapula (shoulder-blade).
- 1 Humerus (upper arm).
- 1 Ulna (forearm).
- 1 Radius (forearm).
- 8 Carpal (wrist).
- 5 Metacarpal (palm of hand).
- 14 Phalanges (3 in each finger, 2 in each thumb).

THE FACE, 14.

- 2 Nasal (nose).
- 2 Malar (cheek).
- 2 Lacrimal ("tear").
- 2 Palate.
- 2 Turbinated (cone-shaped).
- 2 Upper Maxillary (jaw).
- 1 Lower Maxillary (jaw).
- 1 Vomer ("plowshare" in nose).

THE RIBS, 24.

- 14 True Ribs, 7 on each side.
- 10 False Ribs, 5 on each side.
- 1. THE HYOID ("U-shaped"), supporting the base of the tongue.
- 1. THE STERNUM (breast).
- 2. THE HIP BONES.

THE LOWER LIMBS, 60.

- (30 on each side).
- 1 Femur (thigh).
- 1 Patella (knee-pan).
- 1 Tibia (leg-bone).
- 1 Fibula (leg-bone).
- 7 Tarsal (instep).
- 5 Metatarsal (middle of foot).
- 14 Phalanges (2 in the great toe, 3 in each of the others)

THE EAR, 6.

- Malleus ("mallet").
- Incus ("anvil").
- Stapes ("stirrup").

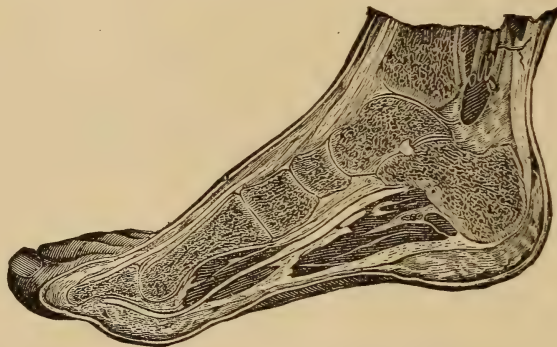
To insure freshness of knowledge, and consequent ease in understanding the treatment, the description of the separate organs is given immediately before the consideration of their diseases. There being no special divisions in this work devoted to the disorders of the bones and muscles, we shall present them in this place, thus adopting an arrangement by which the reader will first see the general outline of the body.

THE SKELETON.

THE SKELETON is composed of more than two hundred bones, arranged and distributed as shown, in the main, in figure 1, and classified in the subjoined table. It is readily seen that the skeleton is the framework of the body, giving it form and firmness. There are three main cavities formed, the skull, the chest, and the pelvis, each making a strong protection for the organs which it contains.



2. SPINAL COLUMN.



3. BONES AND CARTILAGES OF THE FOOT.

THE JOINTS, in which the bones are united to make the skeleton, are formed in such a way as to admit of various motions, except in the skull, where the bones are dovetailed and immovable.

LIGAMENTS.—In the movable joints, the ends of the bones are bound together by ligaments of fiber, of a shiny, silvery appearance, so strong and firmly joined that they often remain whole after the attached bone has been drawn asunder. A “sprained joint” is one in which the ligament has been strained, bringing about a condition often worse than a fracture of a bone.

CARTILAGE.—To the firmness and strength secured by these ligaments, elasticity is added by layers of cartilage, a white, smooth, tough and pliable substance, which covers the ends of the bones in the joints. This cartilage is supplied with a fluid, resembling the white of an egg,

which is secreted by a little sac as rapidly as it is needed for lubricating the joint. Facility of movement is secured by this fluid, and by the cartilage a cushion is formed which prevents, or greatly reduces, jarring of the joints and body.

The spinal column, or back-bone, whose office it is to connect the main divisions of the body, and protect the vital and delicate spinal cord, or marrow, is composed of twenty-six parts, or vertebræ, whose joints are very copiously supplied with cushions of cartilage. In this arrangement we see a wise provision, for in the absence of it the whole body, and especially the nervous system, would be subjected to painful shocks, even in the act of walking.

STRUCTURE OF BONES.—If a piece of fresh bone be kept in vinegar, or other dilute acid, for a sufficient time, it may be bent without breaking. If fire be applied to another piece, it becomes very brittle. By the first experiment the mineral part of the bone is removed, by the second, the animal. These two are the elements of bone, and their proportion depends upon age and health. By uniting them, the strength of the mineral is added to the toughness and elasticity of the animal. The mineral being dominant in the old, and the animal in the young, the bones of the former are more easily broken, those of the latter more easily bent.

On the surface a bone is smooth, white, and exceedingly hard and dense, as every one has often noticed. Through the center is a tube-like opening containing the "marrow," an oily substance through which the life and growth of the bone are sustained. In the region of this marrow, and at the large extremities, the bones are porous, lightness being thus added to the firmness of the hard covering. Not only is the bone tough, firm, light and elastic, but the highest degree of strength is obtained by the adoption, wherever the location will permit, of the curved outline, the strongest known in mechanics.

GROWTH OF BONE.—That a bone undergoes changes in growth, as other parts, is shown by an oft-repeated experiment. If an animal be fed on madder, the bone becomes tinged with red, and this color eventually disappears if the madder is discontinued; or is seen in parallel lines, with white spaces between them, if the madder be given and discontinued at intervals. Bone-growth is also illustrated in the repair after a fracture.

The treatment of fractures, sprains and other disorders of the skeleton will be given under the chapter on Emergencies and Domestic Surgery.

THE MUSCLES.

THE MUSCLES are, for the most part, spread upon the outside of the skeleton, and constitute the flesh. They give the more minute outlines to



4. THE MUSCLES.

THE PRINCIPAL MUSCLES AND THEIR OFFICES.

THE HEAD.

Occipito-frontalis, controls the scalp and eyebrows.

Orbicularis Palpebræ, closes the eye.

Levator Palpebræ, opens the eye.

Recti (four), effect the motions of the eyeball.

Temporal and *Masseter*, raise the lower jaw.

THE NECK.

Platysma Myoides and *Sterno-mastoid*, draw the head forward.

Scaleni, are the muscles which turn the neck from side to side.

THE TRUNK AND UPPER LIMBS.

Pectoralis, draws the arm forward.

Latissimus Dorsi, draws the arm back.

Trapezius, *Serratus Magnus* and *Rhomboideus*, control the shoulder-blade.

Intercostal, are the sets which move the ribs in breathing.

External and *Internal Oblique*, draw the trunk forward.

Erector Spinae, draws the trunk back.

Deltoid, raises the arm.

Teres Major, lowers the arm.

Subscapularis and *Spinatus*, turn the upper arm around.

Biceps, raises the forearm up.

Triceps, draws out the forearm.

Pronator and *Supinator*, turn the forearm around.

Flexor Carpi Radialis, *Flexor Carpi Ulnaris*, *Extensor Carpi Radialis* and *Extensor Carpi Ulnaris*, move the hand, while over thirty muscles are involved in the varied movements of the fingers.

THE LOWER LIMBS.

Iliacus, *Psoas Magnus*, *Pectineus* and *Adductor*, draw the thigh forward.

Gluteus and *Pyriiformis*, draw the thigh back.

Sartorius, lifts one thigh across the other.

Rectus and *Vastus*, draw the leg forward.

Biceps and *Gracilis*, draw the leg back.

Tibialis, *Peroneus*, *Gastrocnemius* and *Soleus*, control the movements of the foot, while twenty muscles are involved in those of the toes.

the body, and are the instruments of motion, being attached to the bones which they are severally designed to move. Their great number, about four hundred, renders it impracticable to give a detailed knowledge of all in this brief treatise; nor is this requisite. All that it is important for the reader to know regarding them, their action and offices, can be gained from a study of figure 4, with the distribution of the principal muscles which accompanies it.

TENDONS.—The ends of the muscles, by which they are attached to the bones, are called tendons, or sinews, are very strong and of a silvery appearance. By placing the hand in the angle of the elbow, when the fist is drawn up, or behind the knee when the foot is drawn back, the tendon will be felt as a hard cord.



5. BICEPS IN FOREARM.

CONTRACTION.—Under the impulse of the will, or upon other stimulus, the muscles have the power of contracting, or drawing up, by which different parts of the body are set in motion. By an act of the will the head is, for example, turned in either of several ways. Again, without the will, and even in spite of it, the heart beats by muscular force, and the muscles connected with breathing keep up their continuous action.

It is thus seen that some of

the muscles are voluntary, or under the control of the will, and others involuntary, wholly or in part independent of the will.

Instructive observations, and a more detailed explanation of muscular action will be found in the introduction on the Nervous System. It is nerve-influence that effects muscular contraction, but the method of its exercise is not understood. The intimate connection between disorders of the nerves and those of the muscles will be better understood, however, after studying them together in the place above cited.

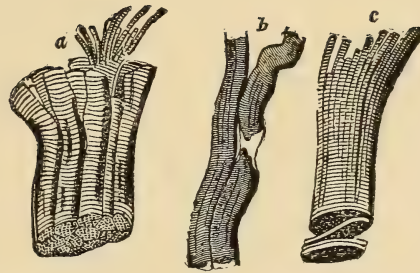
STRUCTURE OF MUSCLES.—Upon examination, a piece of muscle, or flesh, is seen to be red, and composed of bundles of fibers, lying at different



6. TENDONS OF FOREARM AND HAND.

angles, popularly called the "grain." These, we learn by use of the microscope, are composed of finer fibers, marked by parallel lines. By the action of the nerves, the sections of the muscles indicated by these lines are drawn together, thus producing a contraction; but how this takes place is a question relating to nerve-action in general, hence little understood. By this contraction, a muscle is made shorter but thicker, but it is not enlarged, as many suppose.

Disorders of the muscles are generally symptoms of disease in other parts, and do not here call for systematic treatment. On the importance of exercise, and its kinds, the reader is referred to the subject of Hygiene.



7. SECTIONS OF MUSCLES. *a* and *b*, Bundles of Fibers Magnified.
c, The same showing Layers.

CHAPTER II.

SIGNS OF HEALTH AND DISEASE.

TO get a rational view of the treatment of the diseases which we are now approaching, it is necessary to know something of the normal condition of the body, and to be able to recognize the signs which indicate a departure from the same.

The symptoms of disease are of two kinds, those which are known to the sufferer, consisting of pain and distress, and those which are seen by the observer, such as physical changes in the patient, or the functions of the body. The latter field is the more important to the general reader, and comes within the special domain of domestic medicine. It is through these manifestations that we are able to form a clear idea of the ailments of young children and animals in particular, and to successfully treat their many disorders.

The most important points in detecting different morbid conditions are the color of the skin, the general appearance of the face, the temperature of the body, the condition of the tongue and eyes, the pulse, the breathing, thirst, appetite, and the excretions from the bladder and bowels.

THE FACE.

The color of the face is often quite an important sign, and aids much in detecting and locating disease.

Unusual redness indicates an inflammatory condition, and is noticeable in inflammations of the brain, apoplexy, certain eruptive diseases, and various fevers. When the redness is circumscribed, presenting a circular red spot on the cheek, it indicates a lung complication. In inflammation of the lungs, this spot is on the cheek corresponding to the side affected; in hectic fever, occurring during consumption or other exhausting diseases, on one or both cheeks.

Extreme paleness is due to loss of blood, dropsy, or a scrofulous state of the system, and is present in various low fevers.

In some diseases of the heart, apoplexy, congestion of the lungs, and the last stage of cholera, the face becomes livid.

Diseases of the liver, or obstructions in its various ducts, give a yellow or brown appearance to the skin.

THE TEMPERATURE.

The temperature of the skin and body is of great value as a sign of disease. Nature has so adapted the various functions of the animal economy that the temperature of each species is the same in all portions of the globe. The Greenlander has the same temperature as the man at the equator.

In man, the mean or average heat of the body is placed at $98\frac{1}{2}^{\circ}\text{F.}$, or what is known as blood heat, and any considerable change from this standard is an indication of some disorder of the system. The temperature is higher in all acute inflammatory diseases and fevers. It is lower than normal in many chronic diseases, and then indicates debility and a low state of the system. The lower temperature is also found in certain brain disorders and the collapse of cholera.

The best instrument for determining the temperature of the body is the clinical or fever thermometer. Since this valuable instrument has been in common use, it has done much toward the early and correct detection and location of disease. Sometimes the surface of the body feels cool to the touch, from imperfect circulation in the part, or from a low state of the system, as in consumption, and there is no evidence of fever except in the palms of the hands, or on the soles of the feet; but when the thermometer is held under the tongue, a marked elevation above the normal is noticed at once. This is a very important sign in consumption especially, and many times we are able to detect the deposit of tubercular matter in the lungs long before there is any evidence of this disease in the loss of flesh or cough. In well-ordered households thermometers are used for the regulation of the temperature of the air. It is of scarcely less importance that one of the clinical thermometers be in the house. Its use can be easily acquired, and will often be an invaluable aid.

The temperature is usually highest in the eruptive fevers, scarlet fever producing the greatest rise; if it should rise to 105° , it would indicate a severe form of the disease, and if 108° should be reached, a fatal termination would likely ensue.

Sometimes nervous diseases present indications of severe cerebral congestions, and when the thermometer is applied the temperature is found to be normal. On the other hand, hysterical patients may have severe congestion of the brain, and if the thermometer be not applied, and the increase of temperature noticed, the disorder may be mistaken for hysteria, and a fatal result follow.

THE TONGUE.

A coated tongue is not always a sign of disease. Those who use tobacco generally show such a condition, while others, upon rising in the morning, present a like symptom, and still enjoy good health. Yet this member frequently presents indications of disorders of the body and of their importance.

In the various inflammatory disorders, rheumatism, and diseases of the lungs and stomach, there is usually a white coating. In the early stage of typhoid fever, malignant fevers, scarlet fever, small-pox, and other disorders attended with great debility, the tongue has a thick, dirty-white appearance. A yellow coating is found in bilious disorders, derangements of digestion, and affections of the bowels, as diarrhœa, and also in quinsy. A brown condition accompanies chronic disorders of the liver and bowels, the latter stages of typhoid fever, and other putrid states of the system. When the blood becomes extremely vitiated in the last stage of typhus or other malignant fevers, small-pox, scarlet fever, measles and dysentery, the tongue is of a black appearance, and indicates an unfavorable termination.

A bright-red tongue is found in scarlet fever, and, when the papillæ are raised, it presents the appearance of a strawberry, and thus is named "strawberry tongue." A red tongue is also found in some inflammations of the stomach, bowels or lungs.

When convalescence approaches, the coating, of whatever character, begins to pass off, and when this commences at the edges and is gradual, it indicates a speedy return to health. If it commences at the center, the recovery is more protracted. If the tongue clears off suddenly, leaving the surface red and dry, it indicates a more severe stage of the disease. If, however, as in scarlet fever, it clears off suddenly, and remains red but moist, it indicates a favorable course, especially if there is a corresponding decline in the temperature and pulse. When the tongue is large and flabby, and the impressions of the teeth are noticeable in the edges, there is usually some disorder of the digestive organs.

If the tongue is sharp and pointed, with a dry streak in the center, and is protruded from the mouth with a trembling motion, it indicates a typhoid state.

THE EYES.

The eyes also furnish some of the signs which make up the picture of disease. In inflammation of the eyes, measles, in some of the disorders of the brain, in fevers where there is severe congestion of the brain, the eyes are red. In jaundice and other disorders of the liver, they are yellow. In low forms of fever, they present a brownish hue.

The pupils are dilated when there is pressure on the brain; in some convulsions of young children, they are very large. Contraction of the pupils sometimes follows this condition, and also occurs in inflammation of the membrane covering the brain.

When a collection of water takes place on the brain, the eyes sometimes turn in, as they often do also before convulsions.

THE PULSE.

Whenever disease is present, especially if of an inflammatory character, there is usually evidence of such condition in the character of the circulation. Many important points are determined by a careful examination of the pulse. The character of the heart's action and the frequency of its contractions can be determined quite clearly by this means, and while it requires much practice and a careful education of the touch to detect certain conditions which are significant to the physician, many of the ordinary changes can be determined by an observance of the following rules:

The pulse is found in the artery at the inner side of the wrist. The first two fingers should be placed lightly at this point and the pulsations will be readily felt.

In health, the pulsations of an adult are from 65 to 75 per minute; in children, 80 to 90; in infants, 110 to 120. Any considerable change from these figures, unless the increase is the result of exercise or fright, is indicative of disease. In some cases the pulse may be considerably lower, going down even to 40 per minute, and still not be the result of disease; yet, if this condition is not constitutional, but comes on suddenly, it is a sign of pressure on the brain and may be the forerunner of paralysis or apoplexy.

In fever, the pulse is usually higher, in some instances reaching 150 or even 200, either of which rates, if the action is weak, is an evidence of great danger.

A strong pulse which feels hard under the finger, and is increased in frequency, is an indication of inflammation in some part. One that is feeble and easily compressed by the finger, though it may be frequent, denotes exhaustion and a low state of the system; one that is small and wiry, passing under the finger with a sharp impulse, feeling like a thread, is a sign of probable complication of the brain, and of a grave stage of the disease when found in a low fever. When the pulse is feeble and irregular, sometimes soft and hardly felt, then full, occasionally losing one or two beats, then rapid in motion, there is some disease of the heart, either functional or organic; and if such a condition occurs while pursuing the ordinary avocations of life, the patient should be placed under the care of some person skilled in the treatment of such disorders.

The pulse may be intermittent from slight nervous influence and be no occasion for alarm; but if it takes on an intermittent character during the course of serious disease, with sudden prostration, it is an unfavorable symptom, and forebodes a fatal issue.

A regular pulse, one that denotes a state of health, feels full and soft, passes under the finger with a firm, steady movement, and is unaffected by moderate exercise or emotion, and in short people, it is quicker than in those who are tall.

RESPIRATION.

The contraction and expansion of the chest which constitute breathing occur fifteen to twenty times per minute in health, that is, about one inspiration to every four beats of the pulse. One can readily see that this function, so intimately connected with the action of the heart, must necessarily be subject to many changes when disease disturbs circulation.

Any obstruction to the free entrance of the air into the lungs increases the number of respirations. In inflammation of the lungs or the lining membrane of the chest, this free action is impeded by the engorgement of the blood-vessels, and the respiration is increased, in some cases being as high as sixty per minute. This condition also exists when a portion of the lungs is not capable of expansion, because of deposits of tubercular matter, infiltration with fluids, or spasmodic contraction of the air tubes.

When the obstruction is great and the respiration is laborious, there seems to be no intermission in inspiration and expiration of the air, but a continuous effort. This is specially noticeable in croup and asthma, in which all the muscles involved in this important function are brought into use.

When there is serious affection of the abdominal organs, as inflammation of the bowels, the muscles of the chest only are used in breathing; but when there is severe inflammation of the lungs or pleura, the abdominal muscles perform this function.

Irregular breathing occurs in brain affections, and, if intermittent, is an unfavorable symptom; loud, snoring breathing accompanies apoplexy; slow breathing is found in cases of feeble heart-action, and when the patient is unconscious from any cause.

THE APPETITE.

When the human body needs new material to repair the waste constantly going on, it makes its wants known by hunger and thirst. There is no positive knowledge as to the cause of these conditions, but they are probably due to nervous influence brought to bear on the stomach, and usually are subject to habit, to a considerable degree. When meals are

taken at regular hours, a habit is formed, and at the stated time the nerve sends out the impulse to the glands in the stomach, the juices are thrown out, and the irritation they produce on the lining membrane of this organ is supposed to cause what is known as hunger. This process is often deranged or blunted by the excessive use of non-nutritious food, of tobacco, opium, and alcoholic beverages, by irregularity in taking food, by sedentary habits and the like, the result being impaired appetite.

Loss of appetite during acute diseases should always be respected, as it is nature's protest against performing labor when sick or deranged. The practice of forcing food into the stomach at these times is pernicious, and often retards the cure.

An unnatural or voracious appetite not unfrequently attends disorders of the digestive organs, chlorosis and the presence of worms.

THIRST.

Excessive thirst, if persistent, demands attention, as it is a mark of disease. If attended with a large flow of urine, it indicates diabetes. When it accompanies inflammatory and other fevers, it should be gratified, because it is nature's demand for a new supply of the fluids which the abnormal heat so rapidly uses up. The excessive thirst, with vomiting, which is caused by inflammation of the stomach, should be relieved by small draughts of water or, better still, small bits of ice dissolved on the tongue.

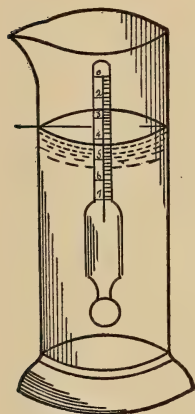
THE URINE.

To the physician, the excretions of the kidneys are of the first importance in making up a picture of a diseased condition. To ascertain their special characteristics and their importance in many diseases, one must be conversant with the science of medicine and practiced in the clinical and microscopical examination of the urine. In general, these matters are out of the reach of the non-professional reader, and thorough directions upon them are therefore impracticable in a work of this kind. There are, however, many particulars as to the color, quantity and nature of the urine, indicative of disease, which are easily recognized by any one.

An adult in health will pass an average of about forty ounces, or two and one half pints in twenty-four hours. Healthy urine is of a light-straw color, and has a specific gravity of 1020 to 1025, the standard being water at 1000. The instrument for determining the specific gravity is the urinometer, which consists of two glass tubes; one of them is open at the top so as to receive the other, which is small, sealed, graduated, and having a bulb filled with quicksilver at the lower end. The first named of these tubes is filled with water, the other is dropped into it, and when it is at rest,

the figure on its scale at the surface is 1000. The denser the fluid to be tested, the higher will be the figure which reaches the surface, and thus the specific gravity of a fluid can be accurately found. In Bright's Disease, the specific gravity is generally lower than normal, below 1015; but sometimes it is very high in certain stages, reaching even 1094. In the latter instance, if boiled, it curdles up like milk and the addition of a few drops of dilute nitric acid will cause a deposit in the bottom of a test-tube, of a grayish-white substance like the white of an egg cooked.

In diabetes, the urine has a specific gravity ranging from 1025 to 1040, is found in large quantities, sometimes several quarts in twenty-four hours, foams when voided, and has a sweetish smell. When one is passing a large quantity of urine, accompanied with great thirst, dryness of the skin and loss of flesh, he should consult a physician at once, detailing these symptoms.



8. URINOMETER.

In jaundice, gall-stones, or other disorders of the liver, the urine is of a dark-yellow or saffron color. In fever, it is red, or high-colored, and scanty. In children with worms, it is milky, and passed quite often in small quantities. It may be bloody and red, or dark, in hemorrhage of the kidneys or bladder; and slimy in catarrhal or other diseases of these organs. In hysteria, it is copious, clear, colorless, and with a specific gravity of 1007. It is dark or black, with foul smell, in putridity. In old age, it is dark-colored, with rank smell. In rheumatic fever, it is strongly acid, turning blue litmus paper bright red.

There may be frequent desire to pass urine, with burning, scalding feeling and many other symptoms, all suggesting inflammation. A small stream, passed with effort, indicates stricture of the canal leading from the bladder. Irritation and pain over the bladder, if accompanied with heat and fever, are marks of inflammation of that organ.

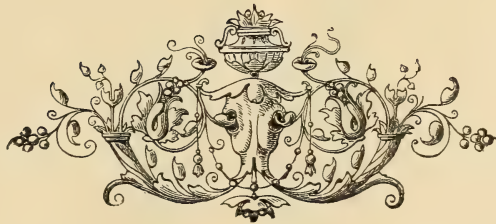
THE BOWELS.

Excretions of the bowels vary much during health, in color, quantity and consistence, so that they are not of so much importance as the urine, unless they are considered in connection with obvious diseases of the system. Yet there are some characteristics in them that can be studied with profit.

Constipation results from inflammation, muscular debility, inaction of the lower intestines, general debility of the system, or deficient bile in the discharges. When it results from inflammation, there are severe pain, stiff feeling of the abdomen, and heat; when from muscular debility, there is a loss of expulsive power; in inaction of the intestines, there is a loss of the

nervous impulse which produces the worm-like movement of the bowels, resulting from debility of the nervous system, or paralysis; lack of bile, nature's cathartic, is indicated by light-colored, grayish, lumpy stools.

Very dark discharges, when not due to the nature of the food, arise from excess of bile. In infants, green evacuations are due to irritation and an acid condition of the excretions. In cholera, the discharges are like rice-water and are made up of the white portion of the blood. Bloody stools usually attend dysentery and piles, the former of which is also attended with straining, pressing pain during evacuation, and frequent desire to empty the bowels; while in the latter, the discharges are covered with blood, or large quantities of blood pass before or after the other excretions. When the passages are attended with slimy mucus, ulceration or catarrh of the bowels is indicated; if they consist of small lumps or pieces, they probably result from constriction of the bowels; if they are involuntary, a low state of the system or loss of muscular power is the probable cause, while such a condition during typhoid fever points to paralysis and is of grave import. The peculiar yellow-ochre color noticeable in typhoid fever is evidence of an ulceration in the glands of the intestines.





THE NERVOUS SYSTEM.
A—Cerebrum. B—Cerebellum.

CHAPTER III.

THE NERVOUS SYSTEM.

ANATOMY AND PHYSIOLOGY.

IT is fitting that we should first give the structure and treatment of the nervous system, because its condition, as we shall soon learn, has such a marked influence upon all other parts of the body. There is also a peculiar interest in its study, because it is the medium for the wonderful phenomena of thought, feeling, and volition, whose possession and exercise give man the first place among created beings.

The substance of the whole nervous system is composed of two elements, distinguishable with the microscope: First, *nerve-fibers*, the *white sub-*

stance, which are delicate white filaments, the smallest of which are but 1-10000 of an inch in diameter. These are arranged in parallel order, and combine to form the *nerves*, whose branches and trunks average about 1-2000 of an inch in diameter.

Second, *nerve-cells*, the *gray tissues*, a grayish, granular substance composed of minute cells, from 1-4000 to 1-300 of an inch in diameter. A collection or group of this substance is called a *nervous center*, or *ganglion*, and, wherever it is found, is intermingled with nerve-



10. MAGNIFIED NERVE-GANGLION, FROM A CAT.

fibers. Many of the cells have little branches which unite with the fibers. It is the office of the nerve-cells to *generate nervous power* at their centers, like a galvanic battery; the nerve-fibers, through their delicate lines, *transmit this power*.

It is of the greatest importance that the distinction between the two elements just named, and that between their offices, be clearly maintained.

We recognize two divisions in the nervous system:

1. The Cerebro-Spinal System, including the Brain, Spinal Cord and Nerves.

2. The Sympathetic System.

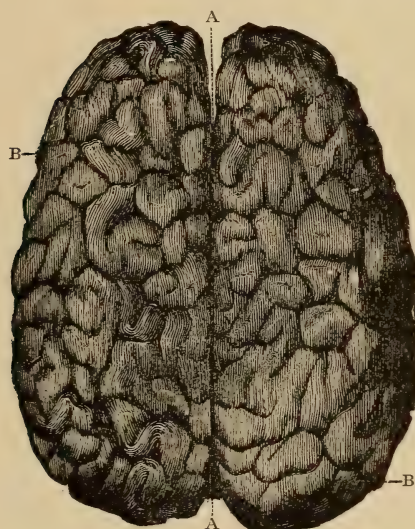
THE CEREBRO-SPINAL SYSTEM.

THE BRAIN.—The brain is the largest group of nervous matter in the body. Its weight reaches nearly fifty ounces in the average adult man, and rather more than forty-five ounces in the adult woman. In man it is heavier than in any other animal, excepting the elephant and the whale; in proportion to the weight of the body, it is inferior only to those of some song birds.

The divisions of the brain are the cerebrum, the cerebellum, the medulla oblongata, and the special nervous centers.

The Cerebrum, which constitutes about nine-tenths of the mass of the human brain, is located in the upper and front part of the skull, and is almost completely divided asunder by a broad and deep furrow which runs from the front to the back.

The winding narrow furrows which mark the surface of the two large lobes thus formed, are about an inch in depth. The *interior* of the cerebrum is composed almost wholly of the white nerve-fibers; the *exterior* is a thin layer of the grayish nerve-cells, which follows the furrows in all their deep and intricate convolutions.



11. TOP VIEW OF THE CEREBRUM.
A A.—Deep Longitudinal Furrow. B B.—Lobes.

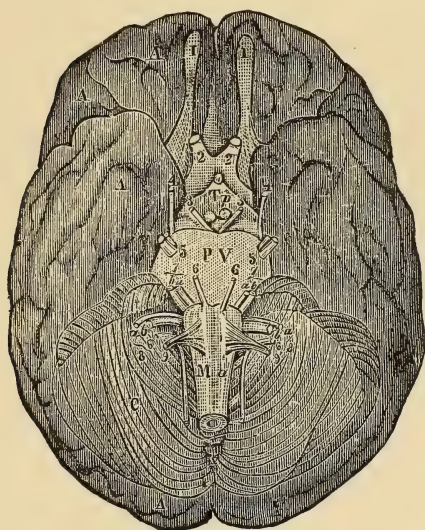
The cerebrum is the seat of the intellectual powers, and hence is the most exalted organ in the body, having authority, so to speak, over all others. Since its power, as noted above, depends upon the amount of nerve-cells, or exterior grayish substance, in its composition, it is readily seen that it is admirably adapted to a high degree of intellectual activity, for its deep and complex furrows furnish an area for the distribution of the cells many times greater than its visible surface. While in the lower animals, in children, and in men uncivilized or mentally undeveloped, the furrows are insignificant, in mature and civilized man they are very deep, and the cerebrum is remarkably developed, indicating intellectual superiority.

The Cerebellum, situated behind and beneath the cerebrum, is also composed of two lobes, nerve-fibers constituting the main part of the interior, and nerve-cells the exterior. It has, however, deeper and more complicated furrows, which are separated at the surface merely by narrow, closely-lying, crescent-shaped ridges. Thus, though it is in bulk many times less than the cerebrum, its convolutions admit a proportionately larger quantity of nerve-cells, and consequently give to the organ a great *nervous* power; we do not say *intellectual*, because it is, in all probability, not the medium for the action of the intellectual faculties. Its office has not been determined with much precision, but it is known to have an intimate relation to the voluntary movements. In operations upon birds for experiment,

the removal of parts of the cerebellum have caused only confusion and lack of control in the motions of the body, which disappeared when the injury healed, showing that this organ has power of giving *definite direction to the voluntary movements*, but does not originate them.

The Medulla Oblongata is a large, cord-like combination of nerve-fibers which come together in great numbers from the cerebrum and cerebellum, seen in figure 13. Passing down through the skull, it enters the spinal column, and is thereafter known as the spinal cord, or marrow.

Within the medulla oblongata is the "vital knot," or "vital point," so named because its destruction is attended with immediate death. At



12. REAR AND BASE OF THE BRAIN.
C.—Cerebellum, with Ridges and Furrows. M.—
Upper end of the Spinal Cord, below the
Medulla Oblongata, see Fig. 14. A.—
Rear View of the Cerebrum.

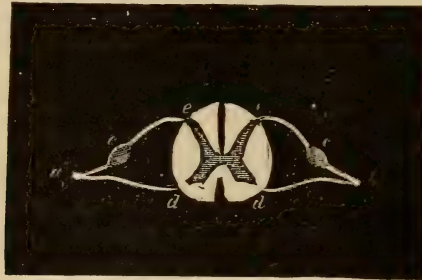
this point arise the nerves which control respiration, and when it is destroyed or seriously injured, breathing stops, and death is precipitated. This fact will suggest that in any brain disorder a disturbance of the breathing is generally to be regarded as an alarming symptom.

Special Nervous Centers.—Of these there are five. Of two of them we know little; a third has an important influence on the sight, and a fourth on smell; the fifth originates the impulse which sets the voluntary muscles in motion, and to it are borne impressions or sensations of objects outside of the body. The functions of these three centers are determined by experiments on birds, similar to those noted above.

THE SPINAL CORD.—This runs the entire length of the spinal column, or backbone. Though it is composed of the same two elements as the organs described above, the order is changed, the nerve-cells being on the inside. Two furrows, one on the front side, the other on the back, run along this cord, leaving a half on either side of the spinal column. This division is of importance, and should be carefully noted.

THE NERVES are bundles of the white nerve-fibers, acting as lines of communication between the different parts of the body and the nervous centers. In the cerebro-spinal system, they are classed as “spinal” and “cranial.”

The Spinal Nerves are enveloped each in a sheath of strong, firm tissue, which gives them a silvery, shiny appearance. They pass off in pairs from the spinal cord, through the joints of the bone, to their respective parts of the body, one nerve of the pair starting from either side of the



13. TRANSVERSE SECTION OF THE SPINAL CORD.

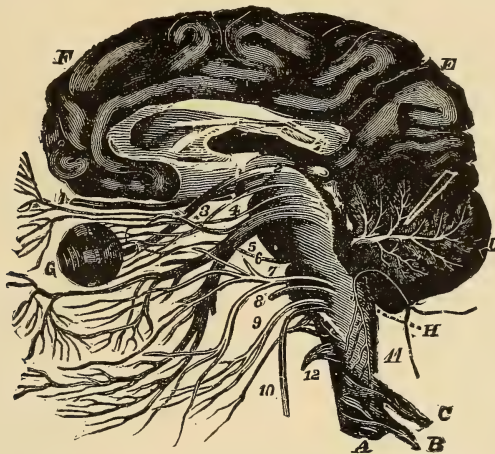
a a.—Spinal Nerves, emerging from the Cord by their anterior roots *d d*, and their posterior *e e*, *c c* indicating ganglia.

cord. Again, each nerve is made up of two roots, one starting from the front part of the cord, the other from the back, which meet just outside the cord, and are there inclosed by the sheath. The branch arising in the back part carries *to the brain* impressions from objects outside of the body, as of something hot, for example; the other carries *from the brain* the power of motion to the affected part. Hence, the fibers originating in the back part of the cord are called *sensitive*; the others, *motor*. Thus divided, the nerves pass out into the body, divide and subdivide, and run to all parts of the skin and muscles of the neck, trunk and limbs, as shown in the general view in figure 9.

Some of the fibers pass up into the brain, others stopping in the nervous centers, as noted before. Of those which go to the brain, the sensitive ones cross over almost immediately after entering the spinal cord, those which enter from the right of the general system passing up on the left side, and

vice versa. A like crossing takes place in the motor fibers when they reach the medulla oblongata. This will explain the singular fact that when one side of the brain is affected, as by paralysis, for example, the opposite side of the body suffers.

Besides the nerves which pass up to the brain, there are others which terminate in the spinal cord. If a foot or wing of a bird be pressed immediately after the head has been taken off, the limb will be drawn back, indicating the presence of some form of sensation. This must be unconscious, since the brain is removed; and it has been shown to have its seat in the spinal cord. This part of the nervous system thus exercises a general protection over the body, frequently making a defense before the brain has become cognizant of the presence of harm, as when one snatches his hand



14. SECTION OF THE BRAIN, WITH CRANIAL NERVES.

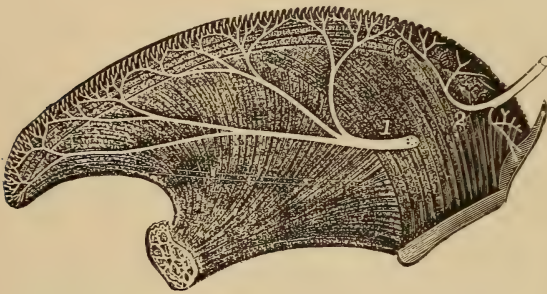
FE.—Cerebrum. *D*.—Cerebellum, divided vertically and showing the deep furrows as branches (the "arbor vitæ"). *H*.—Medulla Oblongata, merging into the Spinal Cord, *A*. *G*.—The Eye. *B, C, 1, 2, etc.*—Cranial Nerves.

from a hot or cold surface before he has felt the pain, or had any thought of it. There are many instances of such action of the involuntary muscles which might be adduced.

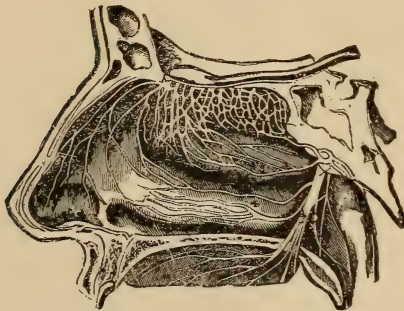
The Cranial Nerves, because of their locality, cannot be so well studied, and a description of these here can be of little practical value, except as it refers to the pneumogastric. Of the others, it may be said in general, that they are involved in smell, taste, sight and hearing, in muscular movements about the head and face, in the facial expression and complexion.

The pneumogastric, so-called from its close connection with the lungs and stomach, is very complicated, and of the highest importance. Fila-

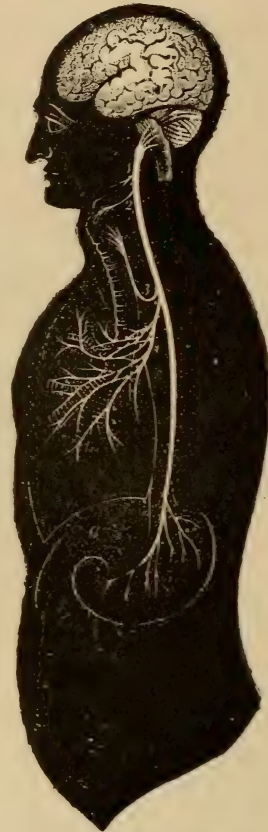
ments collect from the medulla oblongata, pass out of the skull, and are joined by nerve-branches from the spinal cord, in the neck, and with some of the cranial nerves, thus forming a large trunk which is both motor and sensitive. Passing down outside of the spinal cord, it sends off branches to the larynx and lungs, even to the minutest air-cells, controlling or affecting the voice and breathing. It conveys to the medulla oblongata the sensation produced by carbonic acid gas in the lungs, and thus starts the act of breathing, as described in the anatomy and physiology of Chapter V. The main trunk goes down into the abdomen and there branches off to the stomach to control the muscular motions requisite in digestion, and to influence, directly or indirectly,



15. THE TONGUE AND NERVES OF TASTE.



16. NASAL CAVITY AND NERVES OF SMELL.



17. THE PNEUMOGASTRIC NERVE.

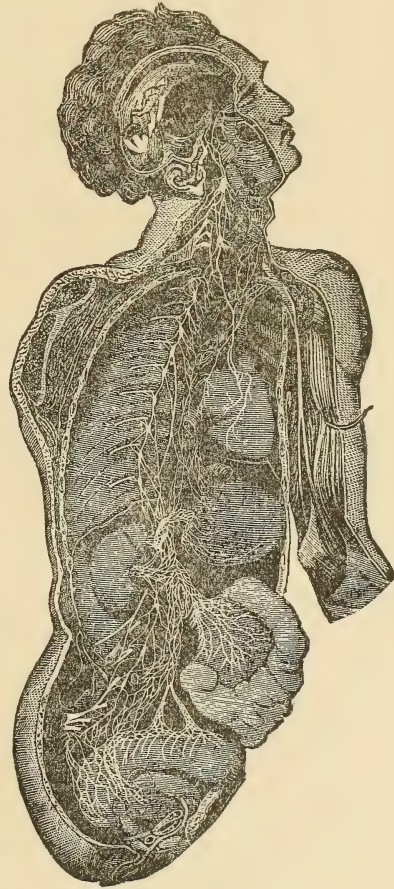
- 1.—Distributed to the Pharynx.
- 2 and 3.—To the Larynx.
- 4.—To the Lungs.
- 5.—To the Stomach.
- 6.—To the Liver.

the secretions necessary in that process. It finally sends fibers to the liver, spleen, pancreas and gall-bladder, but its influence upon them is little understood. By experiments upon its several branches, disturbances in swallowing, breathing and digestion have been produced, and this will suggest an explanation of the coincidences between disorders of the brain and those of

the stomach, between those of the nervous system generally and those of respiration, the voice and digestion.

THE SYMPATHETIC SYSTEM.

This system consists of a double chain of nervous centers which passes down the sides and front of the spinal column. From some part of the cerebro-spinal system, a motor and a sensitive filament enter each of these centers, thus making an intimate connection between the two great nerve-systems. In the head are centers of this group, closely connected with sight, hearing, taste and smell. In the neck are others which affect swallowing, and the action of the heart. In the chest, the centers send off fibers to the lungs, gullet and the aorta, or main artery. In the abdomen, the filaments form a very complex network, extending from the stomach to the base of the trunk, and branching into the stomach, liver, pancreas, spleen, kidneys and genital organs. Owing to its complications within itself, and with the cerebro-spinal system, the functions of the several parts of the sympathetic are not accurately understood. Its nerves are much more sluggish than those of the spinal system; for, while irritation of a spinal nerve causes instantaneous feeling and motion, a part of the sympathetic may be affected and the sensation not be experienced for some time, as when, for example, one takes a cold and does not realize it for several hours.



18. THE SYMPATHETIC SYSTEM.

Some general remarks of value may be made upon this system. By it is produced the motion in the muscles of the small intestine, mentioned in the introduction on the organs of digestion, which is excited by the contact of food with its mucous membrane. Reflex actions extend from the cerebro-spinal system to the sympathetic, and *vice versa*. One may, for

example, contract a cold by exposing the skin, and the internal effect be diarrhœa, inflammation of the bowels, and the like; or, on the other hand, indigestion may affect the sight, or cause convulsions, the latter especially in children. Thus we see that by this system various organs are brought into closest sympathy, and that it is rightly named. The statement that an organ is "affected by sympathy" becomes intelligible. Such complications from reflex actions often mislead one as to the real source and nature of disease, and we conclude at once that the disorders in the nervous system will be varied in number and character, and that much study and patience will be required in their treatment.

Every function of the body, from the profoundest thought of the philosopher to the least twitching of an involuntary muscle, requires the expenditure of more or less nervous power. Respiration, circulation and digestion are all vital processes, and yet, however independent they may be of one another, they must wholly cease if severed from the nervous system. A like remark can be made of all other parts, tissues and organs, and it becomes apparent that, in maintaining a balance in the physical economy, in other words, in promoting health, this great source of vitality and activity must be kept in its normal condition. Because of the intricate structure of the system and the increased study made necessary thereby, nervous diseases are less understood than all others, even by the profession. Hence, more time and patience will be requisite in their treatment, whether it be in the hands of the physician, or in domestic practice.

HEADACHE.

This is one of the most common affections of the nervous system, and has a variety of forms and causes. Though often independent, it is usually an accompaniment of a disorder in some other part of the body. As a symptom, it is frequently quite important, the manner of its appearance and its locality in the head sometimes showing the true nature of a disease.

From the description of the nervous system just given, including the peculiar functions of the sympathetic division, we might presume that headache would be a prominent symptom of many disorders, such as a deranged state of the stomach, obstructed action of the liver, constipation, diarrhœa, or other irregularity of the bowels, the various forms of fever which change the circulation of the blood; in fact the brain being the great central organ of the nervous system, with its intricate connections with every part of the body, there can be few diseases of the human frame in which pains in the head do not occur more or less frequently. We shall here treat those forms of headache in which the pain is the principal or only manifestation. It is

to be observed also, that the character of the pain is of much importance in judging of the cause and in selecting the remedies. We have pains that are called respectively, shooting, darting, sharp, dull, throbbing, tearing, pressing, drawing, screwing, bursting, boring, and piercing.

HEADACHE FROM INDIGESTION.

This is usually accompanied with some change in the appetite, and may result either in its complete loss, with a repugnance to food, or in a ravenous desire for food. The tongue is coated; nausea comes on, often with vomiting; foul taste in the mouth; lassitude; the pain generally deep-seated, with dull aching over the brow.

TREATMENT.—*Iris versicolor* is especially adapted to the form known as sick-headache, with severe throbbing pain, accompanied with faintness; great nausea and vomiting; slight relaxation of the bowels. When one is subject to repeated attacks, a dose three or four times a day during the interval will often prevent their appearance.

Nux vomica is indicated by pain in the forehead; sensitiveness over the left eyebrow; pain increased by eating, motion, stooping, heat, and by noise, and growing worse toward mid-day, but relieved by lying down.

Pulsatilla, for pain similar to that last named, but worse in the evening and increased by lying down, or pressure over the head; moving about relieves the pain. The remedy is especially adapted to this form when it occurs at the menstrual period.

Ipecacuanha, if the pain is accompanied with constant nausea and vomiting; also during the menses, with profuse flow, this remedy may be given in alternation with *pulsatilla*.

HEADACHE FROM A COLD.

Pain in the head frequently results from a cold, and is often the principal symptom of catarrhal affections, both acute and chronic.

TREATMENT.—*Aconite* is useful for such pain, with irritability of temper; heat alternating with chills; pain violent and increased by talking, pressure and noise.

Mercurius, for pressing pain in the forehead, extending to the ears; stiffness and pain in the limbs; thirst; sweating at night; catarrhal symptoms.

Nux vomica, for heavy pain in the forehead, with stuffy feeling in the nose; heat in the head; constipation.

CONGESTIVE HEADACHE.

This is marked by unusual fullness of the blood-vessels, pain in the forehead and temple; dizziness; roaring in the ears; heat in the head; con-

fusion of the thoughts; inability to stoop without great aggravation of the sense of fullness; throbbing pain.

TREATMENT.—Belladonna is needed for fullness of the vessels; red face; redness of the eyeballs; full, rapid pulse; general feverish condition.

Aconite for above symptoms, with pale face; high fever; quick pulse.

This form of headache is liable to frequent recurrence, and when there is a tendency in this way, a dose of *calcareo carbonica*, once or twice a day, should be given. Belladonna, in the same manner, continued for some time, will tend to relieve. This recurrence has often been lessened by the use of some acid, such as lemons, lime-juice, or acid phosphate, the lime-juice being undoubtedly the best.

OTHER FORMS OF HEADACHE.

Wandering, rheumatic pains in the head, with great sensitiveness to the touch, and sometimes vomiting, may be relieved by *nux vomica*, *chamomilla*, or *pulsatilla*. When there is great increase of pain upon moving about, with constant desire to change position, *bryonia* is needed.

Chronic headache is usually due to the use of improper food, tea or coffee, or to derangement of some of the organs or functions of the body. When the cause cannot be traced, *calcareo carbonica*, sulphur or *sepia* may be given once a day, another being tried if one does not afford relief. Articles of food which disagree, oils, spices and the like, should not be used. Exercise in the open air, early rising and plenty of sleep will tend to invigorate the body and lessen the tendency to the trouble.

DIZZINESS.—VERTIGO.

This is usually symptomatic, attending some trouble which indicates its nature and cause.

TREATMENT.—When it is worse upon rising or stooping, aconite and belladonna will afford relief.

Give *nux vomica* when it is attended with constipation; numbness of the fingers; pain in the back.

Belladonna is indicated by rush of blood to the head, showing fullness of the blood-vessels in the face and neck; heat; redness of the face; dizziness after exposure to the sun; ringing in the ears; dullness of the vision; headache; nausea.

Light, digestible food, early rising and daily exercise in the open air will often prove highly beneficial. If dizziness threatens to induce fainting, the patient should lie down on his back, the head being on about the same level as the feet.

SEA-SICKNESS.

This distressing disorder, caused by the motion of a vessel, is due to a disturbed state of the system in which the brain receives a deficient supply of blood. Those of delicate and sensitive organisms, with weak heart-action, quick pulse, and tendency to palpitation, are more often attacked, and such may be affected by the motion of steam or horse cars, carriages or swings.

The following rules, from Dr. Barker's excellent work, are so commendable and trustworthy, that they are deserving of mention, as applying to those who are certain or fearful of an attack. They are not, of course, designed for those who are proof against sea-sickness.

1. Do not go on the steamer in a nervous or exhausted condition; have every preparation made at least twenty-four hours before starting. This direction is particularly important for ladies.

2. Eat a good hearty meal three hours before sailing, of wholesome food.

3. Select a berth as near the center of the vessel as possible. In going to Europe it is better to be on the starboard side, and in returning on the port side, which will be the sunny side.

4. Go on board sufficiently early to arrange such things as may be wanted for the first day or two, so that they may be easy of access; then undress and go to bed before the vessel gets under way. The neglect of this by those who are liable to sea-sickness is sure to be regretted. If subject to nausea, retain the horizontal position the entire passage if necessary.

5. Eat regularly and as heartily as you can (and there is nothing that can be taken better than light chicken-broth), but without raising the head for at least one or two days. In this way the habit of digestion is kept up, the strength is preserved, while the system becomes accustomed to the constant change of equilibrium.

6. On the first night out take some mild laxative medicine, and be careful to keep the bowels open for the remainder of the voyage. Constipation not only results from sea-sickness, but in turn aggravates it.

7. After having become so far habituated to the sea as to be able to take your meals at the table and go on deck, never think of rising in the morning until you have eaten something, as a plate of oatmeal, or a cup of coffee or tea, with biscuit. The Edinburgh biscuit can be taken by the most delicate. If subsequently during the voyage the sea should become unusually rough, go to bed before getting sick. It is foolish to dare anything when there is no glory to be won, and something to be lost.

8. Do not make the mistake of trying to keep on deck—it is a mistake to suppose that sea-sickness is beneficial to any one,—it is often permanently injurious, and has sometimes resulted fatally.

9. The improvement in health from a sea voyage is as a general rule proportioned to the freedom from sea-sickness.

10. Persons with depressed vital powers, and with impaired and feeble digestion should avoid exposure to sea-sickness.

11. Medical art is powerless to cure, but can greatly mitigate and relieve its sufferings.

12. The phenomena constituting sea-sickness are purely physical,—they are not confined to the human race, as animals also are subject to the same malady.

13. Some persons can never become habituated to the sea. Some naval officers are always sick in rough weather

14. The cause of it is due to the sudden and recurring changes of the relations of the fluids to the solids of the body, and nervous disturbances which result from these changes. The liquids contained in the vessels, as well as the solids of the economy, obey equally the laws of gravitation when the body is subjected to alternate movements of ascent and descent. The blood by its fluidity yields more readily to the influence of descent, and less easily than the solids to the ascending impulse. Consequently it does not return to the brain with the same regularity as in the case where the body remains stable, and leaves it more rapidly in the movement of descent. There result as to the circulation alternations of afflux and delay in the arrival of the blood to the different organs of the body, which disturb their functions, and those of the brain especially, analogous to that which follows the loss of blood in some persons who are nauseated and vomit after vivisection.

The horizontal position, which to a certain degree modifies this disturbance of function, is the only approximation to a cure.

15. Rooms near the furnaces are objectionable, not only on account of the heat, which is sometimes very disagreeable, but also from the noise which at certain hours is made by the donkey-engine in drawing up the ashes and cinders."

Petroleum may prevent an attack, and may be considered one of the best remedies. A drop or two on a little sugar may be taken before going on board, and repeated every two or three hours until probability of an occurrence of the sickness is past.

Nux vomica is to be taken for indigestion and constipation, with dull headache.

Kreosote will sometimes check the vomiting quickly when an attack has come on.

Staphisagria has a remarkable efficacy if given before vomiting sets in, and has relieved many cases after the dizziness and unpleasant feeling in the stomach had commenced.

[Glonoine will often relieve the worst cases. Some are benefited only by bromide of sodium, repeated every three hours until the appetite returns. HALE.]

EPILEPSY.—FALLING SICKNESS.—FITS.

Epilepsy comes on suddenly and is rarely preceded by any warning, the patient dropping down with spasmodic contractions of the muscles; distortion of the eyes and face; clenching of the fingers; grinding of the teeth; almost always frothing at the mouth; the spasm lasting from a few seconds to several hours, though generally but a few minutes, and followed by deep sleep and exhaustion.

In some cases, there are symptoms which precede an attack from a few minutes to several hours, consisting of headache; shooting pains; dizziness; sparks before the eyes; strong odors, and strange tastes; irritability; gloomy mood. The most common warning is a sensation as of a stream of water, or the crawling of an insect, which commences at the feet and gradually rises toward the head, the fit following as soon as the feeling stops.

When epilepsy is the result of worms, bad digestion, teething, poison, or other such trouble, the cause should be removed, if possible, and then the attacks are easily subdued. But a cure will be difficult when the causes are hereditary and constitutional, and where there is malformation of the skull, one side being unlike the other; as also when injuries have been inflicted upon the brain or nerves, when tumors or deposits of bone press upon the brain, and when the disorder occurs late in life.

TREATMENT.—When the patient is seized, lay him in an easy position, loose the clothing about the throat, and apply cold water to the face and neck, having every object removed which might injure him. A cork or linen pad should be placed between the teeth to prevent laceration of the lips and tongue by grating the teeth. Aconite and belladonna may be given for the premonitory symptoms.

After an attack, to prevent a return when the cause is not known, give the following remedies as indicated: *Nux vomica*, for constipation; irritability of temper; pain in the back; dizziness; buzzing in the ears; incontinence of urine; indigestion.

Kali bromidum has been extensively used. Though it has often been abused, it has frequently diminished the severity of attacks and their frequency. It is best adapted to recent cases, and to attacks which come on with great violence, the patient uttering a loud shriek and falling to the ground, convulsive and insensible. The bromides of soda, ammonia and nickel, are also superior remedies. The dose for any of these bromides,

including the kali, is from five grains three times daily for a child, to twenty grains three times a day for an adult.

Chamomilla.—Epilepsy in irritable children, during teething, or when they are subject to colic, diarrhœa, and severe vomiting.

Cina and Santonine.—When the disease is the result of worms.

Give a change of place and surroundings, with daily exercise, care being taken to prevent fatigue. Avoid stimulants and overloading the stomach. Simple digestible food, taken at regular hours, should constitute the diet.

FITS OR CONVULSIONS OF INFANTS.

This affection is one of the most common of cerebral and brain affections of children and anything which seriously disturbs the system is liable to bring them on. These are undoubtedly due in many cases to the rapid growth of the brain during the first months of childhood.

Among the disturbances to which children are subject, and which most often produce convulsions, are teething, worms, falls, mental emotions, as anger and fear, transition from chill to fever, and decline of fever. Indigestible or improper food is one of the most fertile causes, and, in a majority of cases, convulsions are due to this alone. Children in whom the disorder has been induced by such food have a great craving for meat, and many times the convulsions will cease after the child has expelled from the stomach a large quantity of meat that has lain there undigested.

In mild cases, the symptoms are slight twitchings of the muscles of the face and fingers, spasmodic breathing, and drawing up of the eyes. In some instances the patient suddenly becomes insensible; the muscles of the head and neck are convulsed; the eyes are insensible to light, and are drawn rigidly up and to one side; the hands are clenched, and the thumbs drawn in; there is frothing at the mouth, with a livid or pale face. This condition may last a few minutes and then cease, or it may return and repeat itself until death ends the scene.

TREATMENT.—Place the lower half of the child in a bath, with the water at a temperature of 98° F. Apply cool water to the head by means of a thin cloth, frequently changed. Loose the clothing about the body, keeping the head raised. When the convulsions cease, dry the body and wrap it in warm flannel blankets, applying to the head a cloth wet in cool water until all congestion ceases.

Belladonna.—Rush of blood to the head; hot, flushed face, especially in fleshy children; starting in sleep; staring wildly about.

Chamomilla.—During teething, when one cheek is pale and the other red; irritable children troubled with indigestion, colic and diarrhœa.

Cina or Ignatia.—When worms are the cause.

Gelseminum.—Convulsions accompanied with disease of the brain.

Veratrum Viride.—Very quick pulse; head drawn back to heels; irritation of the spine.

If possible, medical aid should be summoned at once.

ST. VITUS' DANCE.—CHOREA.

St. Vitus' dance is a form of convulsions that is due to an imperfect control of the muscles, resulting from irritation of the nervous system. It may be partial, affecting one or more of the muscles, or general, involving the whole muscular structure. It usually attacks children before puberty and is generally subject to medical treatment. In some instances, however, it affects some of the muscles during life, sometimes causing odd grimaces and queer motions.

It is caused by worms, fright, teething, derangement of the urinary functions, or self-abuse. Sympathy often produces it, and children who see others suffering from it are liable to contract it.

TREATMENT.—*Aconite* or *Ignatia*.—When occurring from fright.

Cina, *Santonine* or *Ignatia*.—When caused by worms.

Iodine, *Arsenicum* or *Sulphur*.—When arising from scrofula and other blood-taints.

Agaricus will be found useful in long-standing cases, and when the cause is not known; especially if the motions have the peculiarity of stopping when the patient is performing certain labor or during sleep.

Phosphoric acid has made many brilliant cures, a few drops of the dilute acid being given three or four times a day.

A constant stream of galvanism has proved of great value. The patient must be treated with firmness and encouraged to control the muscles by the will as much as possible. If the hands are affected, he should carry pieces of crockery and other articles that can be easily broken. If the lower limbs are the special seat of trouble, he should walk on short stilts. He must be isolated from others similarly affected, and as little notice as possible be taken of his disorder in his presence, its serious character being rather ignored.

[If the patient is pale, showing poor and insufficient blood, iron should be given, and any of its forms may be used, the dose not exceeding one grain three times daily, after meals.]

Cimicifuga has been very successful in young women, or when rheumatism has been the cause of the trouble.

Fowler's Solution is convenient for the administration of arsenicum for the symptoms mentioned for that remedy.—**HALE.**]

STUTTERING AND STAMMERING.

Though these two terms are used interchangeably, they denote different affections of the vocal organs. Hunt says *stuttering* "is a vicious utterance, manifested by frequent repetitions of initial or other elementary sounds, and always more or less attended with muscular contortions." The same writer says of *stammering* that it "is characterized by an inability or difficulty of properly enunciating some or many of the elementary speech sounds, either when they occur at the beginning or the middle of a word, accompanied or not, as the case may be, by a slow, hesitating, more or less indistinct delivery, but unattended with frequent repetitions of the initial sounds, and consequent convulsive efforts to surmount the difficulty."

Either or both may attend St. Vitus' dance, and then treatment is to be directed to the latter. They also arise from deformities of the lips, tongue, teeth, or palate (when they are either incurable or need surgical measures), from enlarged tonsils, or from diseases of the nervous system. It is because they are so often of a nervous origin that they are mentioned in this chapter.

Stammering is often developed in children by the family using "baby talk"—a practice which should be avoided. Speak plainly to a child when he is learning to talk, and teach him to enunciate words distinctly as he acquires the ability to do so.

Great or sudden excitement, loss of sleep, nervous exhaustion, the excessive use of narcotics, and other debilitating influences may produce either of these, though more often only temporarily.

TREATMENT.—From what has been said, it is obvious that the treatment is generally to be directed to some disorder of which stuttering or stammering is a symptom. When a case has become established, it is best to put the patient under the care of some one who is skilled in this particular field, for a minute and patient discipline of the organs of speech is necessary, and sometimes involves weeks or months of care. Assistance may be given if the family will not notice the patient when he is in a paroxysm, *never* imitate or laugh at him, and never excite him. The patient should not try to speak unless his lungs have been well filled. If he will, when in a paroxysm, pinch his clothing, move his feet or other part of the body, or resort to other similar means to divert the attention from his difficulty, his speech will be more likely to flow freely and naturally for the moment.

If a case has not become confirmed, friends may break it up by training the patient to control his speech as far as he can. They must encourage him to speak slowly, stop him when he begins to stutter or stammer (doing this gently and without affected sympathy, never with a start), and have

him repeat many times a word of which he has gained the mastery by frequent trials.

These disorders are said to "run in families," but they doubtless result in many cases from children seeing their elders who are afflicted, and young children should receive attention as soon as they show the first symptoms.

HYSTERIA.—HYSTERICIS.

This peculiar affection is due to a morbid nervous sensibility. It is not confined to women, as is popularly supposed, though its occurrence in men is rare. Its symptoms and treatment are given in full in a subsequent chapter.

BRAIN FEVER.

This difficulty is of a very important character. We shall give the symptoms which are common to the varied forms of inflammation of the brain and its membranes, with general directions for the treatment until a physician can be obtained, and the means to be adopted when such aid is not accessible.

Inflammation of the substance of the brain, without implication of the surrounding membranes, is of a very serious nature when once established. It is highly important that an attack be anticipated as much as possible, so that the inflammatory action may be mitigated in its incipient stage.

The symptoms which indicate the approach of an attack are heat, pain, and heaviness in the head; flushed, swollen face; eyes suffused and bright; pupils dilated; distension and throbbing of the vessels in the neck; irritability; restlessness; intolerance of light; giddiness; nausea; sometimes vomiting. Delirium is quite frequent from the start, the patient rolling his head from side to side, grinding the teeth, and exhibiting stupor. The bowels are usually constipated, and, as the disease progresses, the abdomen becomes flat and sunken; pupils widely dilated, the patient insensible to light; the face sunken and ghastly; the skin cold and clammy; the urine and contents of the bowels are passed unconsciously; the pulse becomes small and thready; the breathing loud; and the patient soon dies in profound, persistent sleep.

At other times, when the brain substance alone is affected, the delirium is not so great; the pulse may be less than usual; one or more of the limbs may become rigid, and paralysis may follow.

Among the predisposing causes are age, sex, intemperance, excessive grief, and mental over-work. The exciting causes are blows on the head, falls, exposure to the intense heat of the sun, and sometimes it has followed the retrocession, or "striking in," of eruptions on the scalp.

TREATMENT.—In the treatment, give the remedies and apply the means of relief promptly. Aconite is needed at first; if relief is not obtained, and the face is very much flushed and swollen, the eyes red and bloodshot, give belladonna.

Hyoscyamus is useful for loss of consciousness; delirium; inarticulate speech; dull, haggard expression of the face; collections on the teeth; deafness; double vision; a desire to escape; great pain in the head.

Opium.—Snoring respiration; low, muttering delirium; stupor; dark-red face; hot and dry, or clammy skin; thick, brownish coat on the tongue.

Arsenicum.—Sunken eyes; deathly look in the face; dry, coated tongue; burning thirst; diarrhœa, the discharge passing off involuntarily.

Arnica.—When the disease arises from an injury on the head; it may be given in alternation with aconite or belladonna.

Helps in the Treatment.—The hair should be cut close, and cloths wet in hot water should be constantly applied and changed as soon as they begin to cool. This allays the inflammation, and decreases the delirium. The feet and limbs should be kept warm. Sometimes cold cloths applied to the head are more grateful and may be used, but the cloths should be changed as soon as they begin to get warm.

The diet is very important, and should consist of fluids entirely, as strong broths, beef-tea, milk-and-lime-water, and koumiss when it can be obtained. Cold water and other simple drinks may be given freely; even pieces of ice will be found very grateful if there be excessive thirst and nausea.

The rooms should be well ventilated, large and airy, and if the eyes are sensitive to light, it should be modified. *Perfect quiet is very important.*

APOPLEXY.

Apoplexy is the result of bleeding in the brain, from rupture of some of the blood-vessels, or an inordinate distension of the vessels themselves from interrupted circulation.

It is not confined, as is too generally supposed, to those who have an unusual supply of blood, and short necks. It finds its subjects among all classes and temperaments, and is due to disease of the blood-vessels. Many times blood-letting takes away the only chance of recovery, without causing a return of consciousness.

When the blood-vessels are in this condition, any action which forces the blood to the brain, or prevents its return therefrom, such as violent exertion, lifting, stooping a long time, powerful mental emotions, or compression of the veins in the neck, may bring on an attack. The use of

alcohol and narcotics may produce the condition of the blood-vessels which gives rise to this disorder. It usually comes on suddenly, though sometimes it gives some marked indications of its approach.

The characteristic symptoms are sudden loss of feeling and motion, the patient falling down; the breathing loud and snoring; the face pale, swollen, and covered with profuse perspiration; the surface of the body cold and bloodless; the pulse frequent, small and weak, or full and sluggish, passing slowly under the fingers. Sometimes the surface of the body is very warm; the face red; the blood-vessels of the face and neck full; the pupils dilated.

The attack is often preceded by drowsiness; fatigue; throbbing of the arteries in the neck; dullness of the vision; dizziness; fainting; indistinctness of speech; headache; prickling sensation in the fingers and toes; the bowels sluggish; often the urine retained. Whatever the cause or the variety, this disease is always alarming.

TREATMENT.—When an attack comes on, the patient should be placed in a large room, where the air can circulate freely. Loose the clothing about the neck and body, put on warm coverings, and apply warmth to the feet and armpits. Raise the head moderately; apply a mustard plaster to the stomach, and warm cloths to the head. Medical aid should be summoned at once, but until such aid arrives, use remedies as follows:

Aconite.—As a substitute for the old-time blood-letting, and infinitely superior, when there is a full, rapid and strong pulse, with dry, hot skin, or weak pulse, ghastly pale face, and collapsed appearance. It may be given for the premonitory symptoms, as well as for the actual attack.

Belladonna.—Red, swollen face; throbbing of the blood-vessels in the face and neck; convulsive movements of the limbs; dilatation of the pupils; loss of speech, suppression or involuntary discharge of the urine.

Opium.—Drowsiness, stupor, or complete coma; irregular, loud breathing; bloated face; dull, stupid expression; eyes partly closed; pupils contracted; extremities cold.

Nux Vomica.—For the congestive condition of the brain indicating apoplexy, and during an attack, when there are no fever symptoms; especially adapted to those cases which arise from sedentary habits, and the use of rich food, alcoholic drinks, and the like.

Phosphorus will correct the degenerated condition of the blood-vessels, and is valuable as a preventive of suspected cases; it is also useful after a patient survives an attack.

Should the patient survive the shock, great care should be taken afterward. The diet must be light, including milk, light puddings, cooked

vegetables, fish and fruit. Meats should be avoided until recovery is complete. Moderate exercise, when possible, should be indulged in. Thorough rubbing of the body will encourage better circulation, and do much toward recovery. The causes of the disease should be avoided as much as possible.

PARALYSIS.—PALSY.

Paralysis is a loss of motion and feeling in some part, due to cutting off or obstructing the communication between the brain and spinal cord. It results from injury to or pressure upon a nerve-trunk, or from a poison. It may affect a small part of the body, as an eyelid or other portion of the face; generally, however, it involves one side, and very rarely both sides. The side of the body affected is opposite that of the brain that is implicated.

The principal causes of paralysis are the same as those producing apoplexy, though it may also result from debility or disease, as rheumatism and scrofula, or from absorption of lead or other mineral poison. If the last is the cause, the chances of a cure are improved.

Facial paralysis may arise from local pressure on the nerve, and is usually independent of brain affection, its direct cause being a swelling in the membrane lining the passages in the bone from which the nerve emerges, or in the glands and tissues of the face. This form usually shows improvement immediately upon the removal of the cause. It may be recognized from the first by the fact that, though the features are drawn up, the sensibility of the parts and the power of mastication are not affected.

TREATMENT.—*Arnica*, when one side is paralyzed, with a weakening of the joints; swelling; great debility; or if an attack of rheumatism is the cause.

Bryonia.—Limbs paralyzed; oppression of the chest, and difficult breathing; feeling not entirely lost; complete loss of motion; coldness in the limbs.

Phosphorus.—Paralysis of old persons when there is wasting of the tissues.

Nux Vomica.—Paralysis of the left side; is useful for the dizziness and numbness which sometimes precede an attack.

Opium and *Belladonna*.—When the disease is caused by poisoning with lead, which, it may be added, is quite frequent, since the country is filled with so-called vegetable hair restorers and dyes which contain lead in considerable quantities. *Belladonna* is specially useful in facial paralysis. Electricity or galvanism is often of great value after the first symptoms have subsided, but should be used with care and under the advice of a physician. The *douche*, bathing in salt water, and sea-bathing, tend to promote nutrition. Friction and massage (see index) promote circula-

tion, and do much to overcome the rigidity of the muscles and restore the function of the paralyzed parts. Exercising freely in the open air is of great value, when the patient is capable of it.

SUNSTROKE OR OVERHEATING.

This difficulty is the result of exposure to great heat, or of over-exertion in vitiated air. It is more liable to occur in air that is damp and muggy, with great heat, than in the direct rays of the sun; it may, indeed, come on in the shade, or even at night, and is quite common in overheated buildings.

It is generally preceded by thirst; pain in the head; heat; dizziness; redness of the eyes and obscured vision; frequent desire to pass urine; irritability; perhaps nausea. Fainting comes on; the skin is hot and dry, or covered with free perspiration; the patient is insensible; the breathing loud, short and rapid, or deep and slow; heart-action weak and fluttering; there may be convulsions.

TREATMENT.—If there are no convulsions, the patient should be quickly stripped, placed in an empty bath, and covered with water, quite cool, poured over the neck and shoulders, until the temperature of the body is reduced. A small quantity of brandy and water, or a little camphor, if there is great prostration, may be given.

If there are convulsions, the patient should be placed in a sitz-bath, or hip-bath, with the water at a temperature of 90°, ice or ice-water being applied to the head with compresses frequently changed.

If the patient is seemingly lifeless, these measures should be combined with the means used to effect “artificial breathing,” and to restore “circulation, warmth and strength,” as described under Drowning.

When the danger of immediate fatal results is over, give aconite every ten or fifteen minutes. [Gelseminum for vertigo, dull vision, stupor and prostration.—HALE.]

Belladonna.—If the eyes are wild and staring.

Glonoine.—Very severe pain in the head, especially in the back part; also, if the patient becomes suddenly unconscious.

Camphor.—Great depression of the pulse; pale face; violent distress in the head. [I prefer the bromide of camphor.—HALE.]

Light, loose clothing, especially about the neck, with flannel next to the skin, and the avoidance of all spirit-drinking, tend to prevent attacks.

Preventives.—Keep down the temperature of the head by placing on the crown cloths, leaves, grass and the like, and frequently wet them with cold water. Wear a loose, light hat that will allow the air to strike the

head. Do not drink excessively of cold water. Totally abstain from all liquors, malt, distilled and fermented; they are unquestionably conducive to sun-stroke.

Bathe the body every night after the work is done and the body has become cool, lukewarm water being the best. Wear light and loose clothes. Keep your living apartments well ventilated. If any of the above active symptoms appear, quit work until the body is thoroughly cooled and restored.

If you have suffered from an attack, be specially careful always thereafter, as a second can be more easily brought on than the first.

DROPSY OF THE BRAIN.

This disorder is almost entirely confined to children, and rarely occurs after the age of fourteen. It generally occurs in those of scrofulous tendency and large head, and usually makes its appearance within the first year, before the bones of the skull are closed. Sometimes children are born with it more or less developed. Occasionally those who have reached adult life are attacked, and the skull being united and solid, the accumulated fluid presses on the brain and causes a bloodless and wasted condition of the brain substance.

Sometimes the disease comes on suddenly, with pain in the head; slow pulse; vomiting; stupidity; dilated pupils; convulsions. Again, the first indication noticed may be the disproportion between the skull and face, the bones of the skull spreading apart and leaving the seams between them wide apart; the face grows dull, small, pinched, and old-looking; the body emaciated; the patient desires to lie down constantly. However much the child eats, he does not grow in body, becomes restless, feverish and frequently cries out. Upon applying the hand to the head, fluctuation may be felt. When the case terminates fatally, the senses become dull; paralysis sets in; the patient dies from exhaustion, convulsions, or, as is quite liable to occur in such cases, from spasmodic croup.

Sometimes this disease follows scarlet fever, whooping-cough, measles, bowel complaint, injury to the head, suppressed eruption, extended inflammation, and abscess of the ear. Children whose parents are addicted to drunkenness are most liable to the disorder, and it should be a sad prospect to those given to this habit that their sins will follow them in the sufferings of their offspring.

The duration is from two weeks to three months, and if extended beyond this time, it becomes chronic, and may last for years before the misshaped body succumbs to its effects.

TREATMENT.—Much has been done in the direction of treatment and many have been relieved by proper hygienic and medical attention.

Aconite.—In the commencement, when the disease comes on suddenly, there being quick pulse, pain in the head, and nausea.

Belladonna.—Spasmodic twitching of the muscles; dilated pupils; convulsions.

The greatest results however will follow the constitutional treatment, the remedies for which are these:

Calcareo Carbonica and **Phosphorus**, especially if there is a scrofulous condition, with deficient nutrition.

Helleborus.—After the water has begun to deposit.

Apis.—For delirium; shrill screaming; head drawn back.

When the collection of water is great, tapping the skull and drawing off the fluid has resulted favorably.

The hypophosphites of lime, soda and potassa, after Churchill's formula, will do much toward preventing the disease, if given to children who are predisposed to it from scrofulous tendency.

CEREBRO-SPINAL MENINGITIS.—SPOTTED FEVER.

This dreaded malady may have existed in ancient times so far as we know, but its first recorded appearance was in the epidemic of Geneva in 1805. Since that time it has prevailed more or less in all parts of the globe. From its epidemic character many have supposed that it is contagious, but this is generally not conceded. That it is infectious there is no doubt, though the character of its germs and their origin are not known. When epidemic, it enters the palace as well as the hovel, but more often chooses those places which are rendered better suited to develop the disease-germs by reason of poor or insufficient food, over-crowded, unclean, damp, and badly-ventilated houses.

Its attack is sudden, usually coming on with a chill, followed by a high fever, violent headache, vomiting, and excessive prostration. The pain in the head is a marked feature of the disorder, and usually affects the back part, together with the upper portion of the spine, producing a sense of stiffness in the parts. The temperature is variable, changing from 100 to 104 in a very short time, and going even higher, though it may again return to the normal, while the other symptoms continue unabated in their violence. The pulse also is irregular, and differs from that in ordinary fever, sometimes being slow with a very high temperature, and again very quick and wiry with a low temperature. In some cases, there will be delirium and partial or complete loss of consciousness from the start, the patient sometimes answering questions slowly and immediately relapsing into stupor. As the disease pro-

gresses, and sometimes at the beginning, the neck becomes stiff, the head drawn back, and convulsions set in. The tongue is heavily coated, or dry and cracked; there is great aching of the limbs, and if the patient is at all conscious, he complains of intense suffering. Very sore spots appear, varying in size from that of a pea to half an inch in diameter, being dark-red or purple in color, not fading on pressure. Sometimes the spots are absent, and do not appear unless the child is in convulsions. There is usually diarrhœa; though sometimes the bowels are constipated. In some cases, the contents of the bowels, as well as the urine, are passed involuntarily. The pupils of the eyes are widely dilated, or extremely contracted, and many times sight and hearing are both gone, one of them often not returning during life. Its fatality is sometimes appalling, patients succumbing to its effects in a few hours, even dropping suddenly in the street, and dying immediately if suffering from any complication of the heart. This extreme severity is particularly noticeable in the commencement of the epidemic, but may not continue; for some may, during the height of its prevalence, have it in a mild form.

The rapidity of its course and the gravity of the disease call for prompt and efficient aid. It should be carefully distinguished from other diseases by observing the severity of its symptoms, the rapidity of their succession, and the intense pain and exquisite sensitiveness of the whole body. It prevails chiefly among children, but may occur at any age. Sometimes it is not epidemic, but one case appearing in a place; yet it may be none the less severe.

TREATMENT.—*Veratrum viride* should be given from the start, during the congestive stage, and continued until the inflammation subsides.

Belladonna and *hyoscyamus* are needed for stupor; delirium; red eyes; pupils dilated or contracted, or one dilated and the other contracted; spasms; twitching of the muscles. When these symptoms appear, one or the other of these remedies should be given, and during the congestive stage, should be alternated with *veratrum viride*.

Gelsemium.—Also in the commencement or congestive stage, the special indications for its use being high fever; moist skin; thick yellow fur on the tongue; loss of muscular power; double vision.

Bryonia and *Rhus*.—When the inflammatory symptoms have subsided, these are indicated by loss of consciousness; stiffening of the jaw; tongue dark-colored, dry, and protruded with difficulty; dark collections on the teeth; sinking down of the body in the bed; appearance of great suffering.

Arsenicum.—When the vital forces fail and symptoms of blood-poisoning intervene; foul, putrid discharges from the bowels; the spots on the surface malignant and gangrenous.

Opium.—As a last resort, when belladonna and hyoscyamus fail to relieve the stupor and paralytic symptoms, and there is profound and persistent sleep.

Alcohol.—The extreme prostration and sinking of the vital forces often call for prompt and efficient stimulants. While the indiscriminate use of alcoholic preparations is not admissible, oftentimes they produce beneficial results in staying dissolution, and bridging over critical places. Their administration should be under skilled guidance, and only in those cases where medical aid cannot be obtained, should they be intrusted to inexperienced hands. An indication for their use is extreme prostration in the commencement of the disease, when the patient seems likely to succumb to the chill. Put two teaspoonfuls of pure alcohol into three times as much water and give one teaspoonful of the mixture every half-hour or every hour, as the severity of the symptoms may indicate.

INFLAMMATION OF THE SPINAL CORD.

The spinal marrow, like the brain, is subject to irritation and inflammation. Mere irritation rarely causes any injury to the structure; and may result from exhaustion or defective nutrition of the nerves, its origin being in some of the nerve-trunks, in the membranes enveloping the cord, or in the cord itself. Inflammation, however, is accompanied with a positive structural change of longer or shorter duration. The acute form is attended with a deposit in the spaces between the membrane and the nerve; the chronic, with a thickening of the membranes, and a greater or less accumulation of fluids about the cord.

The causes are manifold, the most common being injuries from a shock or blow; fracture of the vertebræ; inflammation of the brain, extending to the cord; taking cold.

In most cases it commences with a chill, followed by high fever, and paroxysms of shivering; pain comes on in the backbone at some spot which is sensitive to touch, and, when the body is twisted or moved, is increased to an almost intolerable degree. If the inflammation goes on, incipient paralysis in some parts of the body supervenes, and may become permanent. If the upper part of the cord is affected, the symptoms are quite different, and very serious or fatal results may follow paralysis in this locality, for the nerves branching from this part control the action of the heart and lungs. When the cord is affected midway between the brain and the lower end, some paroxysms of colic will likely ensue, with more or less paralysis of the rectum and bladder. The disease may be very rapid and terminate fatally in a few hours, or it may last for weeks and finally in its course carry off the patient by exhaustion. Complete recovery is rare, there being a loss of nerve-power

in some of the branches near the seat of inflammation, and consequent paralysis of the parts to which they lead. Young children may experience a gradual cure of the paralysis under judicious treatment.

TREATMENT.—This disease is of a grave nature and should command the prompt attention of a skillful physician. Oftentimes a few hours in the commencement is of the greatest importance in its treatment. In case medical aid is not at hand, or is not obtainable, much good may be done by giving the following remedies, as they seem indicated.

Veratrum viride has special efficacy, and is indicated by very rapid and full pulse; pain in the head; great prostration; the extremities numb, with twitching of the muscles; drowsiness; partial unconsciousness; great restlessness. It should be given in doses of one-half drop to a drop of the tincture until the pulse is reduced to one hundred per minute.

Belladonna may be given in alternation with *veratrum viride* if the face is very much flushed; the eyes red and congested; the pupils dilated; and there is great pain in the head.

Veratrum Album.—When the abdominal organs are implicated or the disease is the result of disorder of the bowels, accompanied with severe, cramp-like pains, this remedy will be found of great value.

Secale is specially adapted to inflammation of the spinal cord. The symptoms indicating its use are convulsive twitchings and shocks; painful contraction of the muscles; violent pains in the back; paralysis of the bladder and rectum. It is adapted to both the acute and chronic forms.

Much benefit has followed the use of electricity in cases in which paralysis has followed the inflammatory symptoms. It should be used judiciously and under medical direction. Bathing the back with cold salt-water tends to promote nutrition of the spinal cord. This should be followed by brisk rubbing, both of the spine and the part paralyzed. Outdoor exercise should be taken when possible, and of such kind as to bring into action the parts affected.

NEURALGIA.

When certain branches or portions of the nerves are diseased, as those of the face, chest, limbs and stomach, the disorder is called neuralgia, and takes its special name from the part affected, that in the face, for example, being called facial neuralgia, and that in the stomach, gastralgia.

Wherever it is located, few other complaints are attended with such intense suffering. The pain is sharp, shooting along the track of the nerve and its branches, and is accompanied with more or less inflammation. Though it has several causes, there is little doubt that the predisposition to it is of a hereditary nature. The tendency is excited or aggravated by a decline in the general health; wet and cold; strong winds; draughts of air; sleepless-

ness; anxiety; violent exertion; insufficient nourishment; rheumatism; exposure of the nerve in a decayed tooth; pressure on the nerve from a swelling or foreign growth; injury to the nerve by a wound.

TREATMENT.—Give aconite for pain that is most severe at night; fever; thirst; when neuralgia is accompanied with congestion of the head or lungs.

Belladonna.—Burning, cutting, stinging pains; one or both cheeks flushed and sometimes swollen; eyes red and sensitive to light; congestive headache; jerking pain in the head; also for people of fleshy habit.

Arsenicum is a very potent remedy, the symptoms for which are burning, tearing, intermittent pains, having a tendency to appear periodically; cold increases the pain, which is worse at night or during rest, and usually occurs on the left side. This remedy is especially adapted to cases marked by a general exhausted or debilitated condition; small pulse; pale face; cold extremities.

Phosphorus.—In neuralgia from debilitated condition of the nervous system, especially when due to mental over-work.

Spigelia.—Neuralgic headache and face-ache, especially when the eye is affected; pain wandering, darting about, and accompanied with twitching of the muscle on the side of the face; difficult breathing; palpitation of the heart, worse from touch, motion, and cold weather.

Colocynth is especially adapted to neuralgia of the stomach; also when the pain is chiefly on the left side of the body, and better from application of warmth and rubbing. Sciatica, or neuralgia in the hip, with these symptoms, is often relieved by this remedy.

China or Quinia.—When arising from malaria, or loss of blood; when periodical in character, occurring at a stated time in the day.

Rhus.—Chronic sciatica; pain worse after first moving the parts, but grows better after use.

Many times this difficulty can be relieved by external applications. Aconite or belladonna lotion affords much relief. It should be prepared by adding twenty or thirty drops of strong tincture to three or four tablespoonfuls of water, and applied hot or cold, as most agreeable to the patient, by means of two or three folds of linen or cotton cloth. The strong tincture applied with a brush along the track of the nerve is also efficacious. Instant relief may be secured by rubbing along the track of the nerve a liniment made of oil of mustard and sulphuric ether, one part of the former to four of the latter.

A highly nutritious diet should be taken, including cod-liver oil and the animal fats generally. Insure protection from cold and strong draughts. Warm clothing, bathing in salt water, outdoor exercise, and rest when

the neuralgia occurs in over-worked patients, are essential. Sometimes a change of habits and climate is necessary to effect a cure.

DELIRIUM TREMENS.

Delirium tremens is a direct result of the use of alcoholic stimulants. The principal symptoms are sleeplessness; mental derangement, the mind being constantly disturbed by frightful visions; "the serpent in the cup stinging like an adder" presents, in its dreadful contortions, a terrible picture. The symptoms are much like those in inflammation of the brain, but the previous habits of the patient will be sufficient to distinguish the one from the other.

The disorder usually comes on when the patient has been deprived of a powerful stimulant to which the nervous system has become accustomed by constant use. If the stomach becomes unable to retain such stimulant after it has been long continued, the same effects may follow.

TREATMENT.—The best remedies in the earliest stages are *nux vomica* and *kali bromidum*, the latter especially being freely used. Have the patient take copious drinks of a strong decoction of Cayenne pepper. A teaspoonful of the extract of red Peruvian bark has proved beneficial in both relieving the patient in an attack, and removing the desire for stimulants. Total abstinence is, however, the only sure preventive of succeeding attacks.

[I have controlled delirium tremens better with Jamaica dogwood (30 drops every hour) than with any other remedy.—HALE.]

LOCK-JAW.—TETANUS.

Tetanus is a general spasm of the body, the muscles sometimes assuming such a rigid state that the heels and head are drawn back together. Usually, however, it is confined to the face, closing the jaws so firmly as to prevent any separation whatever; whence the name "lock-jaw."

It may arise from a disorder of the blood or nervous system, or from an injury, an amputation, a punctured wound, as a nail in the foot, a burn, the extraction of a tooth, and the like.

TREATMENT.—*Arnica*, applied to the wound, and taken internally, often relieves. *Belladonna*, *aconite*, or *nux vomica* may be found useful. Sometimes surgical measures are necessary.

It is not within the province of domestic treatment, and should receive skilled attendance at the first indication. Do not put confidence in the many silly newspaper specifics for the treatment of this really dangerous ailment, for you may be responsible for serious results.

HYDROPHOBIA.—MADNESS.

This disorder results from the bite of a mad dog, cat, skunk, or other animal, or from an infected one licking any break in the skin. The symptoms by which to determine whether an animal is infected are mentioned under Hydrophobia in the respective animals.

TREATMENT.—The bite of a mad animal must be *treated immediately*, the best methods for which are given under "Bites; Mad Dogs and Other Animals," in the chapter on Emergencies and Domestic Surgery.

After receiving the bite, the patient will feel no effects during the period of incubation, which varies from a few weeks to a year or two, the wound perhaps having readily healed without leaving any remarkable traces. After that, should hydrophobia develop, the special symptoms will be vomiting; pain about the scar; a spasmodic affection of the muscles of the throat when an attempt is made to swallow, which makes the patient afraid to repeat the trial, and gives rise to a horror of all fluids. There is pain in the limbs, chest, and back; extreme sensitiveness of the surface of the body; mental agitation and terror; great thirst; very sticky saliva, the swallowing of which causes convulsions; lips and cheeks livid and constantly quivering; more frequent and violent convulsions, finally ending in death.

In addition to treating the wounds as noted above, give belladonna frequently for a week, then once or twice daily for six months, or during the whole period of incubation. It should be administered every few minutes if the active symptoms come on. This remedy alone is said to have cured several cases of genuine hydrophobia. Scutellaria is another very superior drug, with claims almost equal to those of belladonna, and may be given in alternation with the latter.

The Turkish bath is cordially recommended as an accessory measure. It should be taken at intervals, not too often, during incubation; also, if active symptoms appear. As a result of an experiment by an American physician, a dog suffering from hydrophobia was said to have been cured exclusively by this bath.

The majority of those who have been bitten by mad dogs do not suffer from hydrophobia. The greatest number reported as dying after receiving such bites is two out of five, while some say not more than one in ten or twelve. These figures, though varying so much, show that the danger is greatly magnified. Indeed, some patients, either soon after the bite, or after brooding over their condition, have gone into convulsions, and died from sheer fright. It is, therefore, of great importance that the patient maintain a calm frame of mind during the full period of incubation, and attend to his regular duties.

CRAMP OF WRITERS AND OTHERS.

This is a spasm of the muscles of the fingers, due to overtaxing them in the duties of different occupations, as in writing, telegraphing, setting type, sewing with a needle, milking, and playing on musical instruments. It commences as a tired feeling in the hand after long-continued use, which increases until it interferes with the occupation, and obliges the patient to rest. After a time, the nerves become so weakened that, upon any effort to perform the tasks which have caused the disorder, spasm is induced in the muscles controlling the fingers.

TREATMENT.—Change the position of the hand when doing the accustomed work; in writing, for example, a large, light pen-holder may be used, or any other mechanical appliance by which the affected muscles can be relieved. The following remedies may be taken, one being tried, followed by another if relief is not experienced: Belladonna, gelsemium, nux vomica, ignatia, zincum and secale. The patient should think of the disorder as little as possible, avoid all anxiety about it, take free outdoor exercise, and rest for a time from the occupation which has caused the derangement.

NIGHTMARE.

This is caused by overloading the stomach, especially in the latter part of the day, by indigestible food, by lying on the back, or by any means that produces undue pressure on the blood-vessels which supply the brain. Regulation of the diet, as to times of eating, quantity and quality, and the maintenance of a proper position when in bed, are the preventives. Visions quite as disagreeable as those arising from nightmare may result from severe or long-continued weariness of the mind. Such cases can be successfully treated only by correcting the habits. Some valuable suggestions will be found for this disorder under Nervous Exhaustion.

SLEEPLESSNESS.

It is evident that sleeplessness is always a symptom, never a disease. Yet, since it is of such frequent occurrence, some general observations upon it will be appreciated by the reader. It is sufficiently spoken of, in those cases in which it attends a known disease, where such disease is treated in this work.

When one finds that his sleep is deserting his pillow without some well-defined cause, he should give it attention at once. In a large proportion of cases, it will be found that the diet is the source of trouble. In such instances, careful observations should be made upon the diet as a whole, and

upon the special articles used. One will often learn from this source what course to pursue. In such observations it will frequently be noticed that, whereas the food has been taken with due care, tea or coffee has been the sole ground of mischief, though they, in turn, have different effects upon different people. Coffee is more liable to disturb the sleep than tea, especially if taken at the same hour. Tea is, however, conducive to sleep in many individuals, while others are much robbed by its use. A cup of hot water, *that has been boiled*, will aid digestion, and thus prove an excellent means of correcting the disorder.

Innumerable instances of sleeplessness, independent of disordered digestion, are found among those who are deeply engrossed with business which engages their thoughts when the mind should be at rest. These cases, if taken at the beginning, require only such recreations as will divert the mind, or, at most, a change of work for a greater or less time. The first appearance of such derangement should be sufficient to induce one to set about its correction at once. Cooling the head with cold water, and keeping the feet warm and the body perfectly comfortable in the bed, will usually be sufficient, if the means are adopted at first.

Neglect of this disorder will sooner or later give one a place among the great numbers of those whose nervous systems have been so seriously over-taxed that the curtailing of duties does not win back the coveted sleep, and the patient spends hours of the night in unrest and mental distress. The vital energies decline, and a strong desire is felt for stimulants, the taking of which but adds fuel to the fire. Opiates are used, but they either soon lose their efficacy, or wholly unfit the patient for sleep, and, at best, derange the system. In these cases, when sleeplessness is the only marked symptom, a strict regimen is preferable to all drugs. The most desirable step is to leave the labors and scenes in the midst of which the disorder has been developed, and to engage in some other congenial pursuit until recovery. Whether making such change or not, the following simple rules will be of great service, and generally correct the trouble.

1. Carefully guard the diet, especially insuring perfect ease of the stomach before and after retiring.
2. Before retiring, avoid laborious mental effort, and seek light and agreeable diversions.
3. Take exercise in the sun and open air, to such an extent as your experience shall dictate, guarding against too much in the evening. See Exercise and Abuse of Exercise, in the chapter on Hygiene.
4. Attend to regular baths, selecting from the list in our article on Baths, such a kind as experiment shall prove best for you, remembering that they are sometimes taken too often.

5. Drink all the cold water you wish, especially before retiring. Cool the head with cold water in the evening.

6. Retire early; be sure the bed is comfortable in all particulars; use covering enough to insure warmth, especially of the feet, but avoid an over-supply, since that is as bad as a deficiency.

7. Yield to inclinations to sleep during the day. Short "naps" then are best, and are favorable to good sleep at night.

8. Remembering that normal sleep is voluntary, exercise the will, and patiently cultivate its power. Sleeplessness is often but a sequel of the will surrendering its rightful authority, and allowing the intellectual faculties to gain the mastery, and run away with the mind. This fact is not sufficiently regarded by those who are sleepless, but its truth becomes more apparent as time goes on, and the hold of the will becomes weaker and weaker.

9. Do not use stimulants of any kind.

10. Avoid all medicines until after a thorough trial of the foregoing rules.

Though it is preferable to correct the ill entirely by hygienic regulations, some remedies may be given *as aids* in a general treatment, or for relief when the cause is something temporary, as indigestion, grief or anxiety.

Pulsatilla is good for sleeplessness after eating too freely.

Ignatia, when grief, disappointment, indignation, or other vexation is the cause.

Opium, after fear or fright, or when disagreeable visions attend the closing of the eyes; also for convulsive jerking after falling asleep; when long watching is the cause.

Give aconite if sleeplessness arises from perplexing or exciting events.

Nux vomica.—When resulting from close mental application, or from dyspepsia, or from drinking coffee.

Coffea.—When caused by excessive joy or other over-excitement. It is also good if drinking tea is the cause, though china is best in such a case.

Scutellaria.—For fidgetiness of limbs at night; restlessness; sudden wakefulness; bad dreams.

Gelseminum is needed where there is no disposition to sleep, especially in the so-called "hysterical," or in nervous excitement; for persistent recurrence to the mind of the affairs of the day.

Belladonna.—Eager but vain desire to sleep; agitation; anguish; frightful scenes; timidity; frequent starting.

Kali bromidum and phosphite of zinc are good general remedies.

Koumiss, before retiring, is superior.

The remedies should be selected with reference to the exciting cause,

and to the disposition and constitution of the individual. They should be used only as accessories to hygienic observances. If they be wholly depended on, the case will almost certainly become chronic.

Many have lost sleep for a long time, and have then found that cold feet have been the sole cause. In such a case, use hot bottles, friction, walking, any other mechanical means for warming the feet. Take internally ammonium carbonicum, graphites, and sulphur, one of them twice a day for a few days, then another in the same way, allowing an interval between them of a few days. Again, the feet may be so warm as to prevent sleep, and should be bathed in cold water at night, while nitric acid, silecea, calcarea carbonica and sulphur are used in the way indicated for remedies for cold feet. Read the articles on Sleep and The Bed, under Hygiene.

The languor incident to loss of sleep is a temptation to use stimulants for temporary relief, which should be resisted, lest bad habits be formed. Besides, in domestic treatment at any rate, alcohol, opium (as a stimulant), chloral, morphine, and the like, should never be used.

If sleeplessness has continued for a long time, it is a serious matter, and demands thorough treatment. Should the patient not get the desired help from the means here given, he should consult the article on Nervous Exhaustion.

NERVOUS EXHAUSTION.

No other word in the English language, perhaps, is used to designate disorders of the body with such a bewildering diversity of meaning, and such a vagueness of ideas, as "nervousness." Restlessness, quick muscular movements under slight stimulus, an air of impatience at petty annoyances, and like manifestations, are looked upon as disagreeable peculiarities of the "nervous," and, since they are supposed to be under the control of the will, and their occurrence therefore inexcusable, they give rise to reproving mention of "hysterics," "low spirits," "hypochondria," and the like.

From a study of the anatomy and physiology of the nervous system, as given above, the reader has learned that the nerves extend to the whole body, and copiously distribute their fibers to the minutest parts of the tissues. A disorder in any part of these delicately woven fibers can be easily extended to others. Again, since the functions of all the organs depend upon the nervous force supplied to them, any derangement of the nerves will react upon the organs to which they are distributed. "Nervousness," therefore, often produces defects in digestion, circulation, secretions, or other functions, and is thus the cause of many disorders of which it is usually considered only a symptom.

This complex distribution of the nerves and susceptibility to varied dis-

turbances is the source of a multitude of nervous ailments. The one under present consideration is of frequent and increasing occurrence, and is sufficiently defined by the words *Nervous Exhaustion*, or the technical word *Neurasthenia*. It has been called the "American Disease," because it occurs more frequently in North America than elsewhere, especially in the Northern States. It is caused by labored, strained or long-continued mental exercise, sudden and violent emotion, undue excitement of the appetites and passions, prolonged anxiety, heredity. Its hereditary tendency is very marked, and it may result from epilepsy in one's ancestry, from insanity, sick-headache, neuralgia, hysteria, or hay fever; or it may be transmitted in the form of any of these. *It runs in families "more demonstrably than scrofula, or cancer, or consumption."

Symptoms.—The greater proportion of the symptoms of this disease are not patent even to the eye of the physician, and can be learned only from the mouth of the patient. This peculiarity makes the disorder, in many instances, particularly subject to domestic practice. The directions, therefore, given in this discussion will be an invaluable aid to the physician when his service is sought, and will also offer a detailed self-treatment.

The leading indications differ in different persons, exhaustion of the brain being most marked in one, that of the spinal cord in another, nervous disorders of the heart and circulation in a third, or of the stomach in a fourth, and so on. The symptoms are necessarily very numerous, one or more having the first prominence in one person, and others in another; or, in the same patient, one symptom or several being most noticeable one day or hour, but different ones the next.

One of the most interesting and misleading symptoms is the flattering appearance of health presented by the patient, which, to the uninformed, in whose view strong muscle is good health, suggests that a morbid imagination or hysteria is the only trouble. The muscular development may be complete, with great endurance of physical exertion, as when the brain especially is exhausted; or a little exercise may cause fatigue in these perfect muscles, as when the main exhaustion is in the spine; or endurance and sudden fatigue may irregularly succeed each other, as when both brain and spine are affected. Digestion may be normal, increased, or even enormous, though freaks of indigestion almost surely occur. The expression of the face is clear and intelligent, often best in the worst attacks, as after a specially sleepless night. Capacity for the discharge of regular duties may be unchanged. The patient perhaps escapes fevers, rheumatism and other inflammatory troubles with which his associates, of better general health, are afflicted. Indeed, the abnormal activity of the nervous system is something of a protection against such diseases.

Indications more palpable to the general observer are quick motions, tremor in fatigue or excitement; starting at sharp and unexpected noises; irritability at slight confusion, and in conversation; impatience of opposition; general excitability; sensitiveness to heat and cold; flushing and paleness of face; twitching of muscles; cold hands; gaping and yawning; changing expression of the eye.

The most distressing symptoms the patient only experiences, such as the following: Sleeplessness from no apparent cause, the mind being provokingly capricious, flitting about despite attempted restraints of the will, the patient tossing upon the bed or walking the floor, with a feeling of general misery, which is felt in no particular locality. One patient falls asleep at once upon retiring, but is soon awake, to so continue the remainder of the night; while another is awake until a late hour, and sleeps well thereafter; or these symptoms may appear in the same person at different times. Sudden twitching of the muscles comes on as one is passing off to sleep, by which he is instantaneously driven from sleep as completely as ever; this twitching sometimes produces the impression of having been tossed up from the bed along one's whole length. The patient experiences ludicrous, confusing or frightful dreams; an inclination to keep the bed in the morning, even though fully awake, with feelings of greater exhaustion than upon retiring; great variations of strength, buoyancy being followed by the greatest exhaustion, like a collapse of the joints; cheerfulness and aptitude for work suddenly giving place to utter indisposition to all activity; general languor, with a craving for stimulants, especially those for whose use a habit has been formed; drowsiness during the day, with an inability to sleep; heaviness of the limbs; extreme restlessness at times; pressure and heaviness in the head; hopelessness; indecision; disturbed circulation, with palpitation and fluttering of the heart, especially when lying down; heat in the head and spine; throbbing in all parts of the body; rumbling in the ears; sick-headache; diminished thirst; dryness of skin, joints and mucous membranes, the hands and feet however often being abnormally moist; tenderness in some or all parts of the body; nervous chills; cold feet; flashes of heat; cramps in the muscles, sometimes very painful and relieved only by strong tension; feelings as of taking cold; numbness in different parts; local temporary paralysis, relieved by rubbing; rapidity of speech, often with thick enunciation, halting as in the stammering of paralysis, and running of words together; flitting pains; itching on some or all parts of the body; increase of urine at times; irritation and irregularity in the genital organs; unreasonable and irresistible fancies about the fidelity of friends; morbid fears, directed against any kind of an object, generally persisting though the patient sees they are utterly groundless.

This fear is but one phenomenon of a symptom which is perhaps the most disheartening to a patient of intellectual aims and habits, namely: Deficient control of the mind, which persists not only at night, as noticed above, but during the day as well; the mind wandering from a subject in which it has taken a lively interest a moment before; flying away again in an instant if it has been forced back by the will; an aimless, dreamy mood may come on, in which the imagination takes the most unaccountable freaks, the patient becoming aroused in his whole being over the images which have, for the time, all the force of reality; attentive reading is often impossible, and even a simple passage may be repeatedly read without being comprehended, though the eye has been intently fixed and the words recognized in their true forms and grammatical relations; this exaggerates any existing mental irritability, and the patient, feverish and excited, leaps up and starts on a rapid walk, or otherwise gives vent to his accumulated feeling, and so gains momentary relief.

The disease may, in extreme cases, go on until great distress is caused by the least noise, with an almost or complete inability to even walk, and other signs of the most delicate excitability. Insanity, or some kindred disorder, sometimes takes place, either in the patient or his offspring.

A careful study of this catalogue of symptoms and of himself will show the "neurasthenic" that he is subject to more of them than would be at first supposed. Though most patients will not have all of them, some will experience them all, and even more. It is of the utmost importance that special notice be given to the exceedingly capricious, and oftentimes incongruous and contradictory, character of these symptoms. Their vacillating nature is one of the most constant manifestations of the disease.

From likeness of symptoms, other disorders are liable to confusion with nervous exhaustion. Organic diseases, in which the structure of the nervous tissue is breaking down, may be included in this class, but they can be distinguished, in general, by the stability of their symptoms, which are much the same all the time, while in nervous exhaustion they are very fitful, as already noticed.

Hypochondria is marked by fear of some disease, as the main symptom. This simple distinction shows how loosely the general public and some physicians use terms, when they call by this name many other diseases. "Hypochondria" and "hysterics" are convenient cloaks for ignorance.

Confusion with hysteria will be removed by comparing the symptoms named under its treatment with the above catalogue.

Anæmia, an impoverished condition of the blood, often confounded with nervous exhaustion, and with a good deal of reason, will be distinguished by an examination of the following parallel tables of symptoms:—

ANÆMIA.

1. Watery condition of blood, with marked paleness, especially on lips.
2. Small, weak, soft pulse, and continued disturbance of circulation; cold extremities.
3. Sleeplessness not frequent; often abnormal ability to sleep.
4. Fatigue from slight exertion; physical labor always more exhausting than mental.
5. Perhaps, and generally, no disturbance of mental faculties, and no mental depression.
6. Generally connected with some organic disease outside of the nervous system.
7. Occurs at any period from birth to old age; much oftener in females than in males.
8. Benefited by remedies for the blood, such as iron.
9. Recovery may be rapid upon removal of the organic disease, and enriching of the blood.

NERVOUS EXHAUSTION.

1. Healthful blood and color, sometimes redness of face.
2. Full or normal pulse, at times very slow or very rapid; circulation normal or irregularly disturbed.
3. Sleeplessness very frequent and stubborn.
4. Fatigue sometimes from slight exertion, sometimes not from a great deal; mental labor (especially in brain exhaustion) more wearing than physical.
5. Consecutive thought and strained mental activity at times impossible, memory often temporarily weak, and mental depression almost universal.
6. Has no natural or essential connection with disease in organs outside of nervous system.
7. Occurs mainly between ages of sixteen and sixty; rather less often in females than in males.
8. Benefited little or none by remedies for the blood, but by those for nervous system, such as are given under "Treatment" below.
9. Recovery almost surely gradual, and under combination treatment.

TREATMENT.—Professor Beard, whose inquiries into this disease have been most valuable and of the highest order, speaks thus of this and kindred nervous diseases: "Although they are not directly fatal and so do not appear in the mortality tables; although, on the contrary, they may tend to prolong life and protect the system against febrile and inflammatory diseases, yet the amount of suffering that they cause is enormous. Volumes are written on typhoid and other fevers; but in this country these neuroses, although not fatal, cause more distress and annoyance than all forms of fevers combined, excepting perhaps those of a malarious origin. Fevers kill, it is true; but to many death is by no means the most disagreeable of the many symptoms of disease." From these words the patient may draw the consolation that, though his case is worse than uncharitable neighbors have supposed, it is not one of imminent danger. It will be of the highest importance in the treatment if the patient cultivates a spirit of hope by learning that his chances of long life are rather above the average, and that, if proper treatment be continued with patience for the required time, a cure is

within his reach. A large proportion of sufferers from this disorder have a fear, more or less constant, of one or more of four things, namely, heart disease, paralysis, insanity, or sudden death. Experience in thousands of cases has shown that nervous exhaustion has no special liability to these, while the chances, as said before, of prolonged life are rather improved. If this burden of mind can be thrown off, a long stride has been made in the treatment.

Though not imminently dangerous, this disease is so complicated that, if possible, one should always consult a physician who has made such disorders a special study. In the absence of this special aid, resort should be had to one of intelligence who can be relied upon to exercise patience and critical study, virtues which all busy physicians have not the time to practice.

Whatever the counsel, one must rely on self-treatment to a great degree, and should make a careful study of his case, with a comparison of the above statements; self-treatment alone will always be beneficial, and very often sufficient.

Do not be discouraged at apparent relapses. In the most flattering conditions the disease is liable to assert itself with sudden and peculiar force.

Avoid over-dosing. Self-treatment is generally over-treatment. Use the remedies and expedients as directed.

If a habit has been formed of using alcohol, tobacco, or other stimulants, break it off. If you can do so, it may be best to stop it gradually. If not, do so at once. As improvement begins and tone returns to the system, the desire for the poison will diminish.

If there are complications of the genitals, read the closing remarks in the chapter on the Urinary Organs.

The treatment must be a combination of the local, constitutional and hygienic. Dependence upon one alone will bring failure. Carefully study the following remedies and expedients, make a rational combination of them, and give such combination a fair trial before dropping it. However good the treatment, change it at intervals, not waiting until it has lost its efficacy. At times leave off all treatment. Improvement may be even more apparent during such periods, but that is no signal for remitting systematic attention. Resume some combination in a week or ten days. It may be found a good rule to make every third week a cessation of all treatment.

Hygiene.—Exercise.—Though a considerable degree of exercise is almost without exception, of much value, and specially needed in nervous troubles, it is very often abused, as when it requires the expending of more energy than the system can afford. Whatever the kind of exercise chosen, it

is often found that one may be injured by an amount which another requires, and the same patient will require or endure a different amount at different times. *Experience must determine this.* If extreme exhaustion or restlessness results from exercise, it is clearly too vigorous, and should be diminished or discontinued. Read on exercise, and the abuse of it, under Hygiene.

Change.—Generally, not always, a change of scene is beneficial, the time varying from a day to months, and even a permanent change in location may be best. Traveling benefits some and seriously injures others, a remark which likewise applies to sight-seeing. A sojourn in a warm climate is often very healthful. Mountainous air, at elevations from fifteen hundred to three thousand feet, is generally better than a seaside resort, though this is frequently good. Elevations of five thousand feet and upward are highly injurious in most or all cases.

Rest is to be recommended in almost every case, but generally it need not be long continued at one time. Those of vigorous mental exercise do better to perform a moderate amount of their accustomed labor. Complete cessation of duties is not advisable, but a change of employment is of the greatest importance, in some cases positively necessary. Much rest with moderate work is a good rule.

The Clothing should be warm, the perfect comfort of the patient being the criterion. A greater quantity will be needed than in normal health.

The Diet must be largely regulated by the wants of the individual patient. It will often be found that an increased amount is required, with greater frequency of meals. Sometimes a very little, a mouthful or two, will be invaluable in the night when sleeplessness persists. Experience must determine this, as also the best kinds and amount of food, and their frequency. Over-feeding is evidently bad. Articles containing starch and sugar should be avoided, but fish, oysters, milk, butter, and in general, the oils and fats, should be freely used, as the stomach will bear them. Coffee tends to produce sleeplessness; tea also in some cases, though it is very beneficial in others. In very severe forms of the disease, use a milk diet frequently fed.

Remedies.—In these, as in other means, the best choice for a given patient is determined by trial. Caprice in symptoms will be attended by caprice of effects from medicines. This remark holds true also as to the dose, some requiring larger ones than others. It may be necessary for the patient to begin with the usual dose and slowly increase, if he feels no effects, up to a reasonable point.

Bromides are among the most common and most useful remedies. They not only allay irritation, but have curative properties as well.

Bromide of potassa is indicated by exhaustion from a deficient supply of blood in the brain; loss of memory; difficulty in expressing one's thoughts or enunciating certain words; absence of mind; melancholy; delusions; optical illusions; spasmodic asthma; sleeplessness from abnormal amount of blood in the brain.

Bromide of soda is useful for much the same conditions as those just described, but is preferable, since it causes less irritation to the mucous surfaces and its prolonged use does not produce as bad effects. Both of these bromides should be used in moderate doses much diluted with water.

Bromide of camphor relieves many symptoms, especially hysteria; sleeplessness; cold extremities; feeble circulation; nervous headache; indigestion from nervous debility following strong nervous emotions, and diarrhœa from the same cause.

Phosphates and phosphites are prepared in different ways, and all possess more or less merit, though their value is sadly overrated. The most commonly used are acid phosphates, and Churchill's formula of the hypophosphites.

Acid phosphates will be useful in the exhaustion following sunstroke, mental overwork, indigestion and sleeplessness; they should be used with care, for they are so stimulating that pronounced serious results have followed their injudicious administration.

Hypophosphites of lime, soda and potassa, may be used when these elements are deficient in the blood. They act as food to the nerves and build up the unnatural waste in the nervous system.

Zinc, either the valerianate, bromide or phosphite, is useful in relieving the neuralgia which is one of the most common sequences of nervous exhaustion; also for chronic cases, with involuntary movements of one or more of the muscles.

Arsenicum is indicated by a low condition of the system, due to deficient blood-supply or other cause, its special indications being diarrhœa; cold or sweating of the feet and hands; sweating at night; weak circulation; general impoverished or run-down system. It should be used a long time to get its best effects.

Petroleum may be found useful in many conditions of nervous exhaustion, such as sick headache; chronic headache, involuntary muscular movements; difficulty of speech, with inability to articulate certain words or letters; staggering when walking; paralysis from exhaustion.

[Picric acid and picrate of ammonia are reliable remedies for mental exhaustion and the ache in the back of the head and neck so common in this disorder.—HALE.]

Cod-liver oil, cream and butter are food for the nerves, and if used ju-

diciously, as the stomach can bear them, are valuable as remedies. A good reliable emulsion of the oil and the hypophosphites of lime and soda is the best form for use.

Koumiss has valuable nutritive properties which are enumerated at some length in the article on consumption. It is so readily absorbed when taken into the stomach that it taxes that organ very little. It is very efficacious in inducing sleep, and often produces most refreshing effects when taken upon retiring.

Alcohol, opium, chloral, morphine and the like, because of their immediate effects and the danger of acquiring habits far worse than the disease, are not to be used in self treatment, under any circumstances.

EXTERNAL TREATMENT.—*Electricity* is unquestionably a valuable expedient in most cases of nervous exhaustion. Its legitimate effects are of course lost, and evil ones produced, by abusing it. It is always best to have it applied by an expert, and should never be used by one who has not been fully instructed as to the best methods. Injudicious use of it has aroused an unreasonable prejudice against it. It may be seriously doubted whether any of the advertised galvanic belts, pads and other appliances are of any value, since most of them are known to be useless.

Manipulations of various kinds are useful, often highly so. Pinching the surface of the body over the trunk and extremities is one form. Another method is tapping the whole body with the fingers. A third, slapping with the palm of the hands, increasing as the patient bears it. Another, pinching the muscles by grasping the flesh, as deeply as one can, in the hands. Still another, the moving back and forth of all the joints, from the shoulders and hips to the fingers and toes. These manipulations give tone and regularity to the circulation, and quiet the whole body. They may be continued from ten minutes to an hour, may be taken every day or less often, and may be joined or not with the use of electricity. Though perhaps disagreeable at first, they will become very grateful and desirable upon repetition. Mild rubbing of the body with the hands, though not equal to the forms just named, often has a most soothing effect.

Water is undoubtedly a valuable expedient, though an exclusive treatment with it is not recommended. The Turkish and Russian baths, among the very best of means, have been too much praised and too indiscriminately used. Injuries certainly have resulted from them, but mainly because the patient has remained too long in the hot atmosphere, or has taken them too often. A rational and thorough trial of them is recommended, as also of the other kinds described in the division of this book on Baths. Their respective merits can thus be ascertained. It is not necessarily an unfavorable indication if the first application of a bath appears to aggravate the

symptoms which it was designed to correct. Such has been the experience when a continued use has proved its excellence. Even an expert is liable to err in administering a bath until he has learned the temperament and constitution of the patient. In general, there is danger of using baths too much, after they have once been begun.

Compresses should be used with as much care as baths. They may be hot or cold. Wet sheets, covered with dry ones, are of advantage. Wet cloths, with thick dry ones over them, may be beneficially applied, in some cases, to the stomach, liver, and genitals.

Ice and *Hot Water* are both useful, a fact which suggests the contradictory character of the disease in different stages, patients, and conditions. Bags or cloths filled with broken ice may have a grateful and helpful effect when applied to the spine or top of the head, but there is danger of leaving them too long. Cloths wrung out in hot water are as likely to impart benefit as the cold applications, and the two are sometimes best used in alternation, each a minute or two at a time.

Counter-Irritation is of the highest value, and may be used in connection with any other means of treatment, but should obviously be applied with care and wisdom. It has been much condemned because much perverted. This expedient is specially desirable for tenderness in any part of the spine. A blister one inch long and a half-inch wide, laid lengthwise along the spine, is a proper size and mode of application. Large ones are not good. Great care should be taken to adapt the size and strength of the blister to the constitution and temperament of the patient. It can be left on until it comes off of its own accord. Another should then be put on and the application be kept up, as one will do no permanent good, however agreeable it may be. The blisters found in the market are not always reliable, and are often unfit for use. A good one is made of a strip of rubber adhesive plaster, of the size mentioned above, with a very small quantity of cantharides ointment spread over the center, or put in spots along the center.

Other expedients in treatment, suitable only in the hands of the physician, are not here given. A careful lookout should be kept up for any local derangements that may cause or aggravate this disorder. If any such are found, the treatment should be directed toward them, though the constitutional and hygienic measures may be taken up at the same time. Cheer, patience, and persistence are of the highest importance and necessity.

CHAPTER IV.

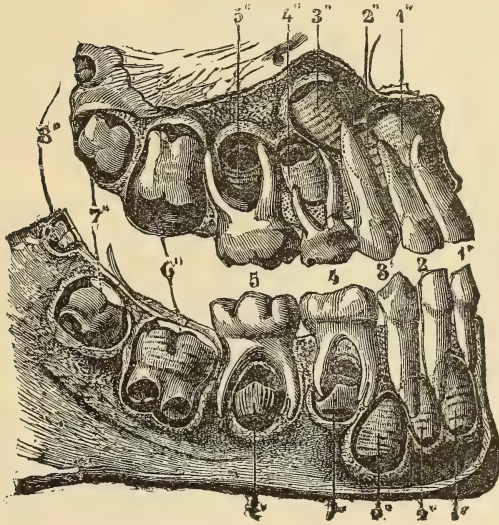
THE ORGANS OF DIGESTION.

ANATOMY AND PHYSIOLOGY.

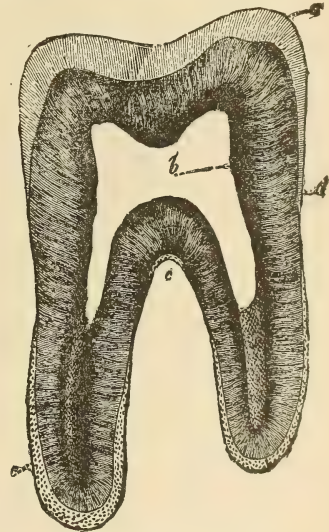
FROM the following description of organs the reader may get a detailed and continuous picture of the complicated process of digestion, which will make the subsequent treatment of diseases more graphic and intelligible.

THE TEETH.

During the first three years the primary teeth, twenty in number, de-



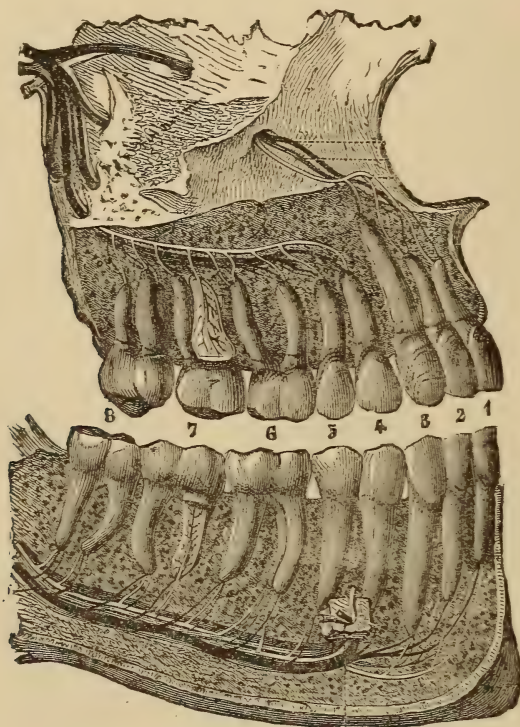
19. SECTION OF THE JAWS.
to 5, Primary Teeth. 1' to 5', First Growth of
Permanent Teeth.



20. SECTION OF A TOOTH.
*a, b, c and d, indicate respectively the
enamel, cavity, roots, and body
of the Tooth.*

velop in the child. At the age of six, four more appear and become a part of the permanent set, one on either side of each jaw. About the age of seven, the first-named twenty begin to come out and give place to the per-

manent teeth. After this change, three appear in the back part of either jaw, the last at about the twenty-first year, thus completing the permanent set. There are now sixteen teeth on each jaw, each half-jaw having two flat, sharp ones in front for cutting, with a long and somewhat pointed one next to them. Behind these are two larger and broader ones, and still further back the large and powerful grinders, or molars. It is readily seen how these different kinds of teeth are formed to cut, tear, crush, and grind the food.



21. SECTION OF THE JAWS.

1 to 8, Permanent Teeth. 7, A Vertical Section showing the cavity, blood-vessels and nerves.

THE SALIVARY GLANDS.

Near the lining membrane of the mouth are three pairs of small sacs, covered with a tracery of little blood-vessels, which are called salivary glands. During mastication, or chewing, a colorless, watery, frothy fluid, known as saliva, passes out of these glands, through small tubes, into the mouth, unites with the food, reduces it to a pulpy mass ready for swallowing, and effects chemical changes preparatory to the later stages of digestion.

It is not easy to overrate the importance of chewing, and the mixture of the saliva. Unlike the other steps in digestion, these are under the control of the will, and great care should be taken to allow ample time for a thorough preparation of the food for swallowing. Rapid eating will almost surely be attended with an excessive use of drinks in place of the requisite saliva. By such haste again, hard pieces of food pass to the stomach and induce indigestion or other painful disorders.

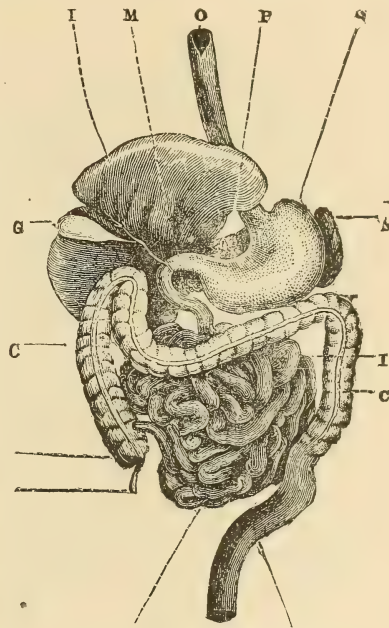
THE ŒSOPHAGUS AND STOMACH.

The gullet, or œsophagus, is a strong, cartilaginous tube, eight or nine inches long, capable of complicated, worm-like movements, by which the food is swallowed, or carried down into the stomach.

The stomach is oblong or pear-shaped, thin, and easily distended, with an average capacity of about three pints in the adult. When food enters it, its lining membrane becomes a deep red, from an underlying network of minute blood-vessels, and furnishes a clear, acid fluid, called gastric juice. This mingles with the food and effects changes in some of its elements, making part of



22. SALIVARY GLAND.



23. ORGANS OF DIGESTION.

- O.—Upper Part of Œsophagus.
- S.—Stomach.
- L.—Liver.
- M.—Lower Opening of the Stomach.
- I.—Small intestine.
- C.—Large Intestine.
- P.—Pancreas.
- A.—Spleen.
- G.—Gall-Bladder.

them ready to pass into the circulation, the stomach meanwhile keeping up continual movements, during the presence of the food, to insure a complete mixture. Some parts of the food are absorbed at this point by the blood-vessels, and pass up into the right side of the heart, whence they are carried as nutriment to all parts of the body by the circulation.

The lower opening of the stomach, with remarkable precision, keeps in that organ all substances which the gastric juice can change, but allows all others to pass into the upper part of the intestine, or duodenum.

THE LIVER, PANCREAS, AND SPLEEN.

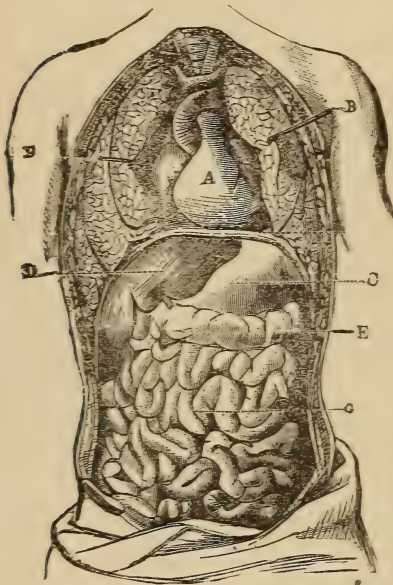
The liver, the largest gland in the human body, is situated on the right side, behind and above the stomach. Its office in digestion is to furnish a yellowish, very bitter fluid, called bile, which it separates from the blood and collects on its under side in a sac, or gall-bladder. The bile is more active in formation during digestion, and passes through a tube into the upper part of the intestine, or duodenum. It is some times called "nature's cathartic."

The pancreas is a gland behind the stomach that furnishes a clear, sticky fluid, called pancreatic juice, which also passes into the duodenum along with the bile, and aids in digestion.

The spleen is a gland on the left, and behind the stomach, whose office is not well understood. Though it has no tube running to the stomach, as the liver and pancreas have, it has an important influence upon certain elements of the food, and, through the blood, on digestion generally.

THE INTESTINES.

Continuous with the duodenum is the small, winding intestine, about twenty feet in length, which is, in its turn, continued by the large intestine, about five feet long. While food is in them, it is carried forward by move-



24. CHEST AND ABDOMEN, WITH INTESTINES.

E.—Large Intestine.

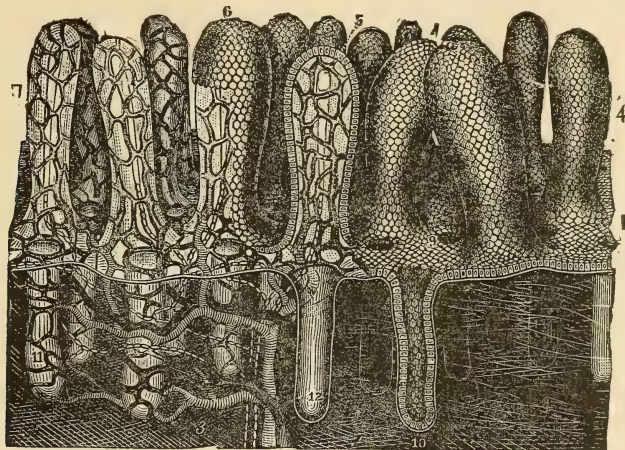
G.—Small Intestine.

A, B, C, D.—The Heart, Lungs, Stomach and Liver, respectively.

ments similar to those in the stomach. When the food enters the duodenum, it is mingled with the bile and pancreatic juice, coming together out of the bile-tube mentioned above. By the action of these it undergoes further changes, its digestible parts becoming a milky fluid, called chyle, while all that is not digestible passes on through the intestines. The chyle, coming in contact with the lining membrane of the intestine, which is arranged in complicated folds, unites with a fluid, called intestinal juice,

secreted by a copious supply of glands, which corrects the results of any imperfect action of the juices previously mentioned.

Though digestion proper is completed with the formation of the chyle, this is not the end. The intestines, especially the small one, are even more copiously supplied with blood-vessels than the stomach, and these absorb the chyle with wonderful activity. Their lining membrane is also supplied with innumerable elevations, or villi, which reach out and absorb the chyle, their blood-vessels carrying it up to the heart. In the small intestine are still other minute vessels, called lacteals, starting in the villi and running along by the side of the blood-vessels. These unite to form one canal, the



25. MUCOUS MEMBRANE AND VILLI OF THE INTESTINES
(highly magnified).

- | | |
|---|--|
| 1.—Outer Cellular Layer. | 7.—Villus wholly stripped. |
| 3.—Under Layer of Fiber | 8.—Lacteals. |
| 2.—Vein. | 10, 11 and 12.—Glands between the Villi. |
| 4.—Villi. | 9.—Mouth of Gland. |
| 5.—Section of Villus, with outer layer, blood-vessels and lacteals. | 13.—Capillaries surrounding the same. |
| 6.—Villus with part of outer layer removed. | |

thoracic duct, through which they carry their contents, which they absorb from the food in the intestines, up into the heart, whence they are driven, mingled with the blood, into the circulation for the nourishment of the body.

It will be seen from the foregoing that digestion is the process by which food is wrought up into suitable form for the repair of the waste in the body. It prepares the material and surrenders it to the blood, the architect of the body, whose functions are set forth in the next chapter. It will be readily inferred, from the number of the digestive organs and their complex functions, that any disturbance in one will be readily felt in the others.

Indeed, almost all parts of the body are affected by disorders of these organs, and the reader can see abundant reason for complications arising in the nervous system, the circulation, and other parts, from deranged digestion, and *vice versa*. It will not be difficult again to understand why so much stress is laid upon diet by all intelligent writers upon health.

TEETHING.—DENTITION.

There are three periods during which the human teeth pass through the gums. The one which is liable to produce disturbance, begins at the age of six months, and ends at or near the commencement of the third year. When the child is about four months old, the rudiments of the teeth begin to harden and force themselves through the gums. At this time, the child appears ill, is fretful, starts and cries out in its sleep, has fever, thirst, restlessness or drowsiness; the irritation goes to the surface and produces a rash; or to the bowels, and causes diarrhœa; or to the lungs, and induces cough; or to the brain, and is followed by convulsions. These are all important symptoms, and contribute much toward the diseases and mortality of infancy.

Because of these symptoms, many children are drugged with anodynes, at the hands of a Winslow or Godfrey, and not only diseased digestive organs but a weakened and perverted constitution are the result, when death does not claim them before.

TREATMENT.—Aconite.—For fever; thirst; hot skin; parched mouth; quickened pulse; restlessness.

Chamomilla.—Feverishness, with perspiration and thirst; convulsions; drawing up of the limbs; diarrhœa, with pain in the bowels; peevishness; restlessness.

Belladonna.—Flushed face; high fever; starts in sleep; wakening in fright, and with staring eyes; pupils dilated; dry cough; rapid breathing; convulsions; irritability; all the symptoms growing worse at night. Give coffea for wakefulness.

Calcareo carbonica.—When the teeth are slow in making their appearance.

Nux vomica.—Constipation, with indigestion. Mercurius, when the ear is implicated.

TOOTHACHE.

The surest, and many times the only treatment, is a prompt application to a skillful dentist. However, diseases other than decay often occur and are readily relieved by medicine, while even in cases of decay remedies sometimes give great relief. There are various causes of toothache, the

most general being rheumatic, catarrhal, nervous (through sympathy with disturbances elsewhere), the collection of tartar on the sides of the teeth or its socket, and taking cold. The teeth are so copiously supplied with nerves that a general nervous derangement will be marked by more or less uneasiness in the teeth.

TREATMENT.—The remedies which have the power to relieve in most cases and which have given the best satisfaction are given, with their symptoms.

Chamomilla.—Drawing or jerking pain, attended by heat and redness of the side of the face, aggravated by eating; teeth feel long and loose.

Nux vomica.—Throbbing, gnawing pain, worse from eating, or exposure to the open air; when the cause is indigestion.

Mercurius.—Shooting pains in side of face, extending to the ears; thirst; swelling of the gums; pain increased during the night and by cold food or drink.

Pulsatilla.—Shooting pain, extending to the ear on the side affected, aggravated by warmth and by rest, but relieved by cold; pale face.

Belladonna.—Throbbing pain; flushed face; sound teeth seem to be affected; pain confined to one side.

Aconite.—Fever with acute, stinging pain, relieved temporarily by cold. A drop of the tincture applied to the tooth by means of a piece of lint sometimes gives relief.

Staphisagria will often check the decay of the teeth; is useful for toothache of a gnawing character, with swelling of the cheek.

Kreosote is perhaps the most efficacious remedy in relieving toothache which arises from decay, and will also, if applied to the tooth, arrest decay. It will be found very useful for children when they are getting their teeth, and the teeth are slow in coming, irregular, and decaying as soon as they come through the gum.

A superior local application, for the relief of pain, is made as follows, and is used by rubbing on the face over the seat of pain a pledget of cotton wet in it.

Tincture of aconite,	1 ½ drachms.
Tincture of opium,	1 drachm.
Chloroform,	2 drachms.
Oil of mustard,	5 drops.

Mix.

A mild galvanic current through the affected part, continued for two or three minutes, may be used with benefit.

[Fill the cavity of the aching tooth with cotton saturated with fluid extract of Jamaica dogwood.—HALE.]

THE GUMS.

The gums are subject to various disorders, mostly of a sympathetic nature, and thus connected with diseases of other parts. Among the varied causes is a lack of their proper care, in consequence of a want of knowledge of the measures requisite to keep them in health. There may also be a diseased state of the system which prevents or retards a radical cure, such as blood taints, scurvy, or the abuse of mercurial preparations.

Inflammation of the gums often arises during teething, and is due to a feverish or otherwise deranged state of the system. The pernicious habit of cutting the gums before the tooth has developed causes this and other disorders, without giving relief to the child, or hastening the protrusion of the tooth. Inflammation also arises from abscess of the teeth or gums in toothache, from canker of the mouth, and from taking cold.

Scurvy of the gums is caused by a salt-meat diet, lack of vegetables, and starvation, being often found in camps, in sailors, and among poverty-stricken people.

Spongy, soft gums, with ragged edges, and loose on the teeth, are produced by a collection of tartar, deranged stomach, dosing with mercury, want of cleanliness, and decayed teeth.

Gum-Boils, or abscesses of the gums, arise from taking cold, inflammation of the gums, extraction and abscess of the teeth. They usually commence in the sockets of the teeth as a result of inflammation of the roots. They are accompanied with great pain, swelling of the gum and cheek, and finally burst through the gum, and sometimes externally through the cheek. The last issue is to be prevented if possible, as it leaves an unsightly scar, and in children may lead to caries of the jaw.

Salivation is usually caused by the abuse of mercury, but sometimes comes on as the result of taking cold. It also accompanies attacks of fevers and disorders of the stomach. It is marked by swelling of the glands in the throat, profuse discharge of saliva and inflammation or ulceration of the gums; the teeth become loose, and when the disorder is caused by mercury, can often be picked out with the fingers.

Bleeding may occur in any of the above disorders of the gums, but especially in scurvy, and is due to a general unhealthy condition of the parts, the removal of which will relieve the trouble.

TREATMENT.—Since the cure of the various diseases of the gums is conditioned upon a healthy state of the stomach, all articles of diet which tend to derange that organ should be studiously avoided, and only plain, nourishing food be used. In the severer forms of inflammation and ulceration, the diet should consist of broths, gruels, milk-and-water, crackers

soaked in milk, and like articles. Strict cleanliness and exercise in the open air should be secured, with good, nourishing, easily-digested diet as the symptoms abate.

FOR INFLAMMATION.—Give aconite for inflammation in teething, in approaching abscess, and toothache. The general symptoms for its use are redness; heat; pain; tenderness to the touch; fever. Arnica is needed for inflammation arising from extracting the teeth or other injuries, it being indicated by raw, chafed feeling of the gums, with tenderness. If the inflammation extends to the face, causing great swelling, pain in the head, and flushed face, give belladonna. Calcareo carbonica is to be given to teething children after the inflammation has subsided, or when the teeth are slow about coming through; also as a preventive against recurring attacks.

FOR SCURVY.—First remove the cause by avoiding those articles of diet which provoke the trouble, as mentioned above, and substitute milk, vegetables and good general diet, with such vegetable acids as vinegar, lemon-juice, and lime-juice. Give mercurius when the gums are red, spongy, ulcerated, bleeding easily, with looseness of the teeth and a profuse flow of saliva and blood. Arsenicum is indicated by dark, livid gums; pale, cold, and very dry skin; painful or not sensitive ulcers, which are dark and foul-smelling. Hydrastia, which has great efficacy in this disorder, can be used with advantage internally, and also on the gums, the latter use being designed to correct the foul, ulcerated condition of the mouth, gums and tongue. A wash should be made of the fluid hydrastia, twenty drops to a teacup two-thirds full of water; and this remedy internally may be alternated with arsenicum when the latter is specially indicated. If tincture of myrrh be applied to the gums, it will improve their soundness and hardness, and will also cleanse the mouth and relieve pain and inflammation.

FOR SPONGY GUMS.—Get a dentist to remove the collections of tar-tar and other substances, then keep the teeth clean by washing them morning and evening in cold water with a soft brush. If the gums are tender and bleed easily, the tincture of myrrh should be used as directed above. Give nux vomica when the disorder arises from deranged digestion, and is attended with constipation, foul taste in the morning, and offensive breath.

FOR GUM-BOILS OR ABSCESES.—If one of these is threatened, a dentist or surgeon should be consulted, and if pus has formed, it should be liberated by lancing the gum at an early stage, so that the surrounding tissue may not be implicated. Give mercurius in the beginning, if there be much swelling, pain, throbbing, and a profuse flow of saliva. Aconite is needed, if there is fever; when given early, before pus has formed, it will often check the inflammation and prevent the formation of an abscess; it may be alternated with mercurius. When an abscess is caused by the

extraction of a tooth, it usually indicates an injury to the jaw-bone, and generally terminates in the expulsion of pieces of the bone; inflammation may also set in after an extraction in consequence of the shutting in the socket of some foreign matters. In either of these two cases, the gums and bone should be examined, so that all offending materials may be removed, and abscess and caries be avoided. Silicea is to be administered after an abscess has discharged, that the healing may be hastened, and further decay of the bone be prevented.

FOR SALIVATION.—This is properly a constitutional disorder, but is here treated because it manifests itself more particularly in the gums. Give potassa chlorate internally if salivation arises from an abuse of mercury. A solution of the same may be used as a wash, a few crystals being dissolved in a half-glassful of warm water and applied as a wash for the mouth, and gargle for the throat. Give mercurius if the patient is of a scrofulous habit, with a disposition to swelling of the glands and decay of the teeth; also when the salivation results from a cold. Hepar is also a good remedy when the abuse of mercury is the cause; and may be found useful after mercurius when the latter is indicated. Use hydrastia as a wash to remove the constitutional taint.

FOR BLEEDING.—This is but a symptom of various disorders of the gums, and will usually be corrected when the latter are relieved; but the following remedies may be advantageously used when there is a persistent tendency to bleeding: Acidum phosphoricum is needed when bleeding is excited by the touch, with a raw feeling of the gums; also when the bleeding occurs in low states of the system, as typhoid fever, small-pox and diphtheria. Mercurius is needed if the bleeding gums are swollen and painful. When the bleeding is due to a spongy condition of the gums brought on by mercury, give china or carbo vegetabilis.

[Wash the mouth frequently with extract of hamamelis.—HALE.]

THRUSH.

This disease consists in minute vesicles or ulcers covering the membrane which lines the mouth, throat, gums and tongue, extending sometimes, in severe cases, to the stomach and bowels. These spots resemble small particles of curdled milk, and if not promptly relieved, may unite and form a complete covering to the membrane. It is the result of a debilitated state of the system, an insufficient quantity, or unhealthy condition of the food, the exhaustion from severe sickness, or the diseases attendant on old age. In the last case it is unfavorable, and many times is followed by serious results. It is confined principally to children, and pro-

duces fever, pain on swallowing, and sometimes swelling of the glands of the neck.

TREATMENT.—Cleanliness is of the first importance, and with the application of a solution of borax, four grains to one ounce of water, will often be all that is necessary.

[I have had better success with sulphite of soda, a teaspoonful to a quart of water, than with any other wash, in obstinate cases.—HALE.]

Mercurius.—Offensive breath; excessive drooling; diarrhœa.

Arsenicum.—When the eruption extends to the stomach and bowels; offensive odor and exhausting diarrhœa; cold, clammy feeling of the skin; and when the spots have a blue, livid appearance.

MUMPS.

The parotid gland, situated just in front of the ear and on the side of the face, contributes to the supply of saliva which is mixed with the food during mastication. This gland is subject to an inflammation, contagious in its character, sometimes extending to both glands; at others, only affecting one, and liable to occur on the opposite side later in life. One attack of this disease, if affecting both glands, precludes a return. Its course is usually attended with slight fever, and generally, especially in warm weather, requires no other treatment than warmth and protection from cold or exposure. Sometimes, when the enlargement is suddenly checked by external applications or exposure to cold, the inflammation is transferred to other parts, and is liable to produce serious results.

TREATMENT.—Apply warm fomentations or poultices to the affected parts, keeping the parts covered with flannel or cotton batting until the swelling disappears.

Mercurius.—In ordinary cases, especially if the glands in the throat are affected.

Belladonna.—If there be a high degree of redness and fever. The diet should be light, and the patient kept warm.

INFLAMMATION OF THE MOUTH.

This consists in sore patches of redness on the membrane lining the mouth and tongue, from which an exudation is liable to take place. It is due to exposure of badly nourished children to cold, derangement of the stomach from measles or other eruptive diseases, or the introduction of hot or acid substances into the mouth.

TREATMENT.—Potassa chlorate is to be given for foul breath; soreness and ulceration of the mucous surface of the tongue, palate and cheeks.

It may be prepared by dissolving a piece of crystal the size of a pea in a gill of water, washing the mouth thoroughly, and, at the same time, swallowing a small quantity.

Mercurius.—When there is a great flow of saliva.

The affection will often be immediately removed if a wash is early applied of tannic acid ten grains, in two ounces of water.

The difficulty usually arises from derangement of the stomach, and attention should, therefore, be given to the diet. As a rule, patients should be confined for a few days to a diet of milk and soda water, in equal proportions. As the disease declines, cocoa or chocolate, with animal broths, may be given.

OFFENSIVE BREATH.

In perfect health, the breath is sweet and agreeable; but when it is foul, it is often the occasion of much mortification and trouble. There are various causes of offensive breath, the most common being decay of the teeth, neglect to clean the mouth after eating, derangement of the stomach, scurvy, malignant sore throat, and catarrh.

TREATMENT.—Treatment must depend entirely upon the cause of the affection. Particular attention, however, should be given to cleanliness and proper food, with an abundance of exercise in the open air. Animal food should be eaten in moderation. The teeth should be cleaned twice a day, and an excellent wash for this purpose is made of perfumed carbolic acid, ten drops in four ounces of water.

Carbo vegetabilis.—Putrid odor of the breath from decayed teeth, bad condition of the gums, or large doses of mercury.

Mercurius.—Fetid breath from a sore mouth or thrush.

Nux vomica and pulsatilla.—If arising from indigestion.

CANKER OF THE MOUTH.

This disease usually occurs in children from two to six years old, and is the result of tubercular habit or the use of improper and insufficient food. It generally begins at the edge of the gums of the front teeth of the lower jaw, causing them to become spongy and to separate from the teeth; the teeth become loose, as is the case when caused by the use of mercury. If unchecked, it spreads along the gums, the jaws become affected, the lips and cheeks are involved in intense swelling.

TREATMENT.—The treatment, as regards diet and exercise, should be the same as recommended for offensive breath. Give a generous allowance of strong beef-tea, raw eggs beaten in milk, and when there is a scrofulous condition, cod-liver oil. A wash of potassa chlorate or borax will often

give great relief, and in mild cases, with the addition of the following medicines, be all that is necessary to effect a cure. If, however, the disease does not yield, and the breath is foul and the swelling extensive and painful, then medical aid should be summoned.

Mercurius usually cures cases not caused by abuse of this drug.

Arsenicum.—Extreme prostration, with extensive breaking down of the tissues.

[A wash of nitric acid, slightly sour, is very efficacious.—HALE.]

ULCERS ON THE TONGUE.

Small red spots appear on the tongue and form ulcers which discharge pus. There are sometimes fissures or cracks, usually opposite the large teeth, and are the result of indigestion, or irritation from the stumps of decayed teeth.

TREATMENT.—Hydrastia, as a wash, is a valuable remedy; the strong tincture may be used.

Carbolic acid or nitric acid, four or five drops in a glass of water, may well be used, for rinsing the mouth three or four times a day.

Mercurius.—When this drug has not caused the trouble.

Nux vomica.—Indigestion; constipation.

Hepar.—If the patient has used mercury, or if mercurius does not relieve.

INFLAMMATION OF THE STOMACH.

Acute inflammation of the stomach, unless caused by poisoning or some irritant, is a rare disease. The symptoms are, burning pain increased by pressure; thirst for cold drinks; inability to retain either food or drink; great heat and fullness; constant nausea; foul taste; coated tongue; coldness of the extremities. The most frequent causes are large quantities of cold water drunk while the body is heated. Emetics have produced it; also mechanical injuries. In the chronic form it usually accompanies disease of the liver, heart and kidneys, and the use of alcoholic drinks.

TREATMENT.—Arnica.—When resulting from an injury, blow, or fall.

Arsenicum.—When there are great prostration and burning thirst.

In acute cases, small pieces of ice, if swallowed, give great relief, and often stop the intense nausea and thirst.

Warm fomentations, or mustard pastes, applied to the stomach, are highly recommended. It is advisable, until the stomach can retain food, to abstain from its use, or nourish the patient by injections of nutritious fluids. The stomach remains feeble, and great care should be taken for some time after an attack.

Inflammation of the stomach is a serious disease, and often requires for its proper management the skill of a well-instructed physician, and the first duty is to summon that aid.

[I have seen prompt and surprising benefit in serious cases, after ice had been used in vain, from frequently sipping very hot water in small quantities.—HALE.]

SPASM OF THE STOMACH.

Cramp in the stomach comes on with a gnawing, contracting pain, extending to the back, other symptoms being faintness, nausea, and sometimes vomiting and cold extremities. It is usually induced by indigestible food or the use of alcoholic drinks.

TREATMENT.—*Nux vomica* is useful in more cases than any other known remedy, and especially those which arise from indigestion. The special indications for its use are pressing pain in the stomach after eating, with a sense of fullness, nausea and vomiting; constipation, especially after the use of coffee or stimulants.

Pulsatilla is indicated by the above symptoms and irregular menstruation.

[Bismuth, a few grains in a tablespoonful of water, repeated every fifteen minutes until relief comes, is often superior to *nux*.—HALE.]

Bryonia is needed when a cold or rheumatism is the cause.

Those who suffer from this affection should select their food with studious care, and avoid the use of alcohol.

VOMITING OF BLOOD.

Bleeding from any part of the body is always an occasion for anxiety and alarm; especially when the blood is expelled by the mouth. In order to allay apprehension in this matter, we give below a well known table showing the difference in the symptoms between hemorrhage of the stomach and that of the lungs.

FROM THE STOMACH.

1. The blood is of a *dark* color.
2. The blood is *vomited*.
3. The blood is often mixed with *food* and is *not* frothy.
4. Is preceded by *nausea* and distress in the *stomach*.
5. Blood is generally passed with the *evacuations from the bowels*.

FROM THE LUNGS.

1. The blood is of a *bright red* color.
2. The blood is generally *coughed up*.
3. The blood is generally *frothy*, and mixed with *spittle*.
4. Is often preceded by pain in the *chest* and *hard breathing*.
5. Blood is not found in the *stools*.

Hemorrhage of the stomach is the occasion of much less alarm than

that of the lungs. The causes of the former are highly irritating stimulants, bruises, vomiting and retching, ulceration, obstruction in some other organs, and also deranged menstruation. When the last is the case, this bleeding taking the place of the menstrual flow, the treatment should be directed to restoring the normal monthly function.

TREATMENT.—When hemorrhage comes on, the patient should be treated calmly, placed on his back on a bed or sofa, the clothes be loosed, the head raised, and all loud talking or noise be prevented. The room should be cool, if possible, with plenty of air, and not crowded with anxious friends or officious helpers.

Give the patient small pieces of ice freely, urging him to swallow them. The stomach should have complete rest, nothing being taken into it but iced water until the trouble has ceased. To prevent exhaustion, in some cases food and broths may be taken by injection. Should faintness occur and be persistent, iced champagne will prove an excellent restorative, and not be likely to produce vomiting.

Medical aid should be summoned in all cases, the following remedies being meanwhile administered as here indicated.

Aconite.—Flushed face; palpitation; anxiety; quick pulse.

Hamamelis.—This drug, from its prompt action in hemorrhage from the veins, has proved an efficient remedy in the difficulty, and when the blood is dark, is usually all that is needed.

China.—Debility; feeble pulse; cold hands and feet; fainting.

Arsenicum.—Difficult breathing; palpitation; anguish; burning heat; thirst; small and quick pulse.

Arnica.—When the disorder arises from injury or violent exertion.

WANT OF APPETITE.

The symptomatic relations of appetite to disease have been defined in another chapter, and a more explicit discussion of its relations to diseases of the stomach is presented under dyspepsia. There is also a condition of the system wherein the appetite becomes impaired, without special lesion of any organ, and it is this class of cases which we have in view, as they come under the influence of the thousand and one "stomach-bitters" which, under this name, include a thousand and one noxious combinations of poor liquors and poorer drugs.

Want of appetite arises from various causes, and is usually an accompaniment of disorders of the bowels and inflammatory diseases. It is very often a beneficial condition, as it prevents the digestive organs from being burdened with food at a time when they are least capable of making proper use of it to nourish the body. It exists in both acute and chronic diseases,

and when these have disappeared, there is a return of appetite as well as of health. We also have loss of appetite as the result of nervous weakness, improper habits, irregularity in taking food, imperfect mastication or chewing of the food, eating in a short time after a hearty meal, drinking a large quantity of fluids while eating, heavy suppers before retiring, sleeping after dinner, the excessive use of liquors, tobacco, tea and coffee, and constant satiety.

TREATMENT.—To relieve this troublesome complaint and restore the natural tone of the stomach, the patient should correct any of the above habits, or others which may be known to cause the trouble; take moderate outdoor exercise, never violent before meal time; retire early and rise early; use cold water as a drink between meals; drink a glass of hot water before breakfast; use plain, well cooked food; avoid all stimulating condiments and highly seasoned food.

Nux vomica will relieve, if there be constipation; dizziness; loss of taste; accumulation of water in the mouth; and when the trouble is due to late hours, late meals, spirituous liquors, and lack of nervous force.

Pulsatilla.—If arising from the use of rich, greasy food, pork, or pastry made of lard. This remedy is best adapted to cases with bitter risings; slimy, foul taste in the mouth; water brash; salt or sour vomiting; bloating of the abdomen, worse in the evening; and is suited to females with light hair.

Ignatia.—Very little appetite, a small amount of food satisfying, and any more than this being swallowed with difficulty; nervous disorders of the stomach; and when the want of appetite is due to powerful emotions.

[Tincture of columbo, ten drops in a little water a half-hour before meals, is excellent in loss of appetite from weakness.—HALE.]

When the disorder arises from the causes named, stimulants can be of no service, whether taken in the food or otherwise, but much harm is often done by using appetizers, whatever their kind.

DYSPEPSIA.—INDIGESTION.

As we stated in a previous paragraph, the teeth masticate the food, grinding it and mixing it with saliva, preparatory to its reception by the stomach, when it is again stirred and mixed with the gastric juice. After this process, it is passed on to receive other juices, and finally enters the blood and is conveyed to the heart, whence it is sent to repair the waste constantly going on in the body. This necessitates much labor on the part of the stomach, requiring sometimes several hours before a supply of food has been disposed of.

Our diversified diet, the use of stimulants, indigestible food, the gratifi-

cation of taste, compel the stomach to perform unusual and unnecessary labor, and tend to derange its functions. As a result, that organ, on which so largely depend life and happiness, becomes very often the seat of misery.

It is not the purpose to give an elaborate description of the different forms, but rather a general outline of the most prominent ones, with the best methods of preventing the disorder, and of treating it when it has come on. The general symptoms are quite well known to all under the common term "indigestion," the more conspicuous being impaired appetite; flatulence; nausea; belching of bitter or acid fluids; furred tongue, often large and flabby and showing impressions of the teeth on its sides; foul breath; heart burn; pain in the stomach; sensation of weight or fullness after eating, however small the amount; depression of spirits; palpitation of the heart; various affections of other organs, as constipation and diarrhœa.

TREATMENT.—Treatment depends largely on hygienic measures, and the strict observance of several fixed rules. The first thing of importance is the proper selection of food, and, as a rule, fresh animal food, cooked so as to retain all its juices, is received the most kindly, being more easily digested, and causing less flatulence, than the use of vegetables. Hard-dried, cured meats, ham, tongue and sausages are especially to be avoided; also veal, pork, meats that have been cooked more than once, salmon, lobster, crabs, salads, cucumbers, raw vegetables, cheese, new baked bread, coffee, and particularly any food or drink that occasions distress after eating.

Stimulants, malt liquors, spirits, or wines, *are to be avoided under all circumstances*, even if their use does give temporary relief. The taking of alcoholic preparations is productive of the most serious derangements of digestion, and the seeming benefit, whether derived from the extensively advertised "bitters," or liquor in its clear state and purest form, is the result of deadened sensibility, and the trouble is still going on, growing worse each day.

Fluids should be used moderately, unless the food is taken in that form. Cocoa or black tea will be received kindly. Water, against which some have a prejudice, is often one of the best means of preventing or curing dyspepsia. This should be used with caution, and but a small quantity be taken at meals, as it cools the stomach and checks the flow of gastric juice. A cup of hot water, taken before meals, increases the gastric juice and aids digestion.

The food should be well masticated; therefore plenty of time should be allowed for the meal. To accomplish this part of digestion, the teeth should be in good order, and if the natural teeth are decayed or lost, their place should be filled by a skillful dentist.

A cheerful frame of mind and pleasant, but moderate, conversation

favor digestion, by increasing the flow of gastric juice. The shop and the counting-room should not be thought of at the table; neither should the meal be taken immediately after severe mental or physical labor. The meals should be regular; in fact, regularity in all the habits of life, such as taking food, sleep, and exercise, is important in the prevention and cure of dyspepsia. The patient should retire early and rise early, sponge the body with cool water, and take moderate open-air exercise daily.

Koumiss.—This remedy, though properly a food, has some medicinal properties as well, and its introduction into use has done much toward robbing this disorder of its terrors. It may be made the exclusive diet of dyspeptics, and if care is taken not to overload the stomach with it in the start, it will be soon taken with relish, and in such quantities as to speedily build up the loss in flesh and strength. A full description of its use and manner of preparation may be found in the article on Consumption.

Nux vomica takes a leading place among remedies when the symptoms are pain, tenderness and fullness of the stomach after meals; heartburn; hiccough; sour, acid risings; flatulence; vomiting of food and bile; sour or bitter taste; drowsiness after eating; headache in the morning, with confusion and inability to connect the thoughts; sallow complexion and irregular action of the bowels; constipation; piles, with frequent urgings to stool. This remedy is especially adapted to persons of dark, bilious complexion and sedentary habits, who eat largely and take alcoholic drinks.

Pulsatilla.—Indigestion from rich pastry, fatty food and much secretion of mucus; heartburn; acid, bitter or putrid taste; frequent loose evacuations from the bowels. Females of mild disposition, light complexion and subject to menstrual irregularities, are particularly benefited by this remedy.

Iris versicolor.—Much vomiting and diarrhœa, with frequent attacks of sick headache.

Bryonia.—Burning at pit of stomach, worse on moving; chilliness with lameness; aversion to food; constipation.

Chamomilla.—Sensation of sinking at the stomach; oppression of the chest, and pain in the region of the heart; vomiting of food; thirst; shooting pain in the temples. [If this fails, try ignatia.—HALE.]

[Bismuth, subnitrate or oxide, in doses of two to ten grains, taken immediately before or after meals, will always relieve the dull, heavy, painful pressure which follows the eating of even ordinary food.

Pepsin is a very valuable aid to the cure of dyspepsia, when there is

slow digestion from deficiency of gastric juice. The following prescription is invaluable in many cases:

R Pepsin,	-	-	-	-	1 drachm.
Dilute muriatic acid,	-	-	-	-	$\frac{1}{2}$ "
Subnitrate of bismuth,	-	-	-	-	2 "
Glycerine,	-	-	-	-	$\frac{1}{2}$ ounce.
Water,	-	-	-	-	$3\frac{1}{2}$ "

Mix.—Give a teaspoonful before or after meals.—HALE.]

HEARTBURN.

The above term signifies a sensation of acrid heat in the region of the stomach, rising up into the throat. It is due to some irritating cause in the stomach, as spices, strong stimulants, tea, sharp acids, smoking, or presence of bile. It has no connection with trouble in the heart, as its name would imply. Hiccough is a frequent accompaniment, which in infants may be corrected by a little milk or water.

TREATMENT.—Chamomilla is the principal remedy, and, if taken occasionally, will prevent its return if the special cause is removed.

Carbo vegetabilis.—Acid or acrid belchings, with flatulence and constipation.

Chronic cases will yield to nux vomica, bryonia or pulsatilla.

In obstinate cases, Krukneburg's prescription is often followed by admirable results, namely, "When the patient is hungry, let him eat butter-milk, and when thirsty, let him drink buttermilk."

[Phillips' Milk of Magnesia is the best palliative known for acid eructations and acid changes in the food, even when causing diarrhœa and colic in children. A teaspoonful taken an hour or two after meals immediately relieves this distressing condition.—HALE.]

VOMITING.—SICKNESS.

Vomiting is usually a symptom of some disorder of the digestive organs, or, through sympathetic irritation, of disease of organs more remote. The causes are quite numerous; among the principal ones we have indigestion; pregnancy; disease of the brain, kidneys or uterus; obstruction of the intestinal canal; cancer or ulcer of the stomach; morbid states of the blood; eruptive fevers. If the conditions preceding vomiting are relieved by it, then it may be considered a favorable symptom; if they are not relieved, but are increased, or if the vomiting is the result of brain disease, epilepsy, and the like, the condition is of an alarming form.

TREATMENT.—The vomiting of pregnancy or hysteria will be fully treated in the chapter on those disorders, to which the reader is referred.

If vomiting results from overloading the stomach, or from the presence of irritating substances, it should be encouraged by drinking warm water, tickling the throat with a feather, or other means, until the offending material is expelled.

If organic disease be the cause, that should be treated, remedies being meanwhile given to afford temporary relief.

One of the best expedients, in connection with any remedy, is small pieces of ice on the tongue, or chewed and swallowed. It is very grateful to the patient and often allays the agonizing thirst which usually accompanies this disorder. [Or sipping very hot water.—HALE.]

Carbolic acid meets most cases, and will often relieve when all other means fail.

Ipecac.—Simple copious vomiting of greenish or blackish fluid; mucous vomit; diarrhœa.

Kreosote.—Chronic persistent vomiting, when not caused by indigestion; constant retching without vomiting.

Arsenicum.—Vomiting and purging with great prostration; burning in the throat, accompanied with intense thirst; when caused by cancer and other malignant diseases of the stomach.

Iris versicolor.—Bilious vomiting, with headache and diarrhœa.

The diet should be simple, nourishing, and not irritating. Chicken broth is often of great benefit. Beef-tea, soda-water or lime-water and milk (in equal proportions), given in small quantities, can be retained and digested.

COLIC.

This term is applied to every pain in the abdomen, but it has various causes, and requires discrimination in its treatment. It arises from irritating substances, bile, indigestible food, acrid or acid substances, cold, passage of gall-stones, and constriction of the intestines.

In simple colic, there will be a severe twitching, griping pain in the abdomen, generally near the navel, usually relieved by pressure. The bowels are constipated, and there is constant desire to relieve them, with little passing but flatus. There is seldom fever.

TREATMENT.—**Chamomilla.**—For women and children especially; pinching, twisting pain, with drawing up of the knees.

Colocynth.—Extremely acute, cramp-like, cutting pain; tense, hard abdomen, with anxiety and restlessness; diarrhœa, with flatulence.

Nux vomica.—Spasmodic, flatulent colic, with pressing, burning pain, attended with nausea or vomiting, and a constipated condition of the bowels.

Iris versicolor.—Severe, flatulent colic, with diarrhœa, sometimes yields to this remedy when all others fail.

Warm fomentations should be applied to the abdomen, and if the bowels are constipated, a copious injection of warm water be used at once. This alone often gives immediate relief. Care should be taken in the diet, and flatulent food, especially vegetables, and all other articles known to disagree, should be avoided. Medical aid should be summoned if relief does not soon follow the means recommended above.

CONSTIPATION.

Constipation is a retarded action of the bowels by which the contents become hardened and pressed in the rectum, where they are retained for a longer or a shorter time. It is not always a symptom of disease, and the practice of using cathartics when the bowels do not move once or twice a day is a pernicious one, and always attended with bad results. Purgatives during sickness are extremely injurious, and while they afford a temporary relief, the irritation of the delicate mucous membrane of the intestinal tract is followed by weakness, a chronic catarrh is induced, and the condition sought to be removed is aggravated to a large extent.

The *London Lancet*, a leading medical journal of Europe, in a prominent article in October, 1870, after strongly denouncing the prevalent custom of indiscriminate purgation, makes the following observations upon what cathartics can not accomplish, and the pernicious results in those cases in which their use is customary:

“(1) *Purgatives can not eliminate or throw off morbid poisons.* They have no power, except for evil, in the eruptive fevers, including typhus and enteric (typhoid).

“(2) *They can not remove a clot on or in the brain.* Apoplexy is known now to depend on degeneration of the blood-vessels, which purgatives might damage, but could not possibly benefit.

“(3) *Purgatives can not overcome a mechanical obstruction of the bowels.*

“(4) *They are unnecessary in the case of lying-in women.* The tendency of purgatives is to weaken the patient, lessen the amount of milk, and retard the restoration of the parts by disturbance.”

This is good teaching, and, in fact, a constipated condition of the bowels of lying-in women is one of the best indications of progress to health and strength.

Daily evacuations of the bowels, which are usual in early or middle life, are often in excess in advanced life, when three or four times a week are

sufficient. This fact should be known, as old people often trouble themselves needlessly on this point.

Constipation is a frequent accompaniment of convalescence, and is nature's means of establishing an equilibrium of the secretions, and as strength is obtained, the intestines assume a healthy action, while the use of purgatives, by diminishing the strength, retards this action and prevents a speedy recovery.

The symptoms accompanying persistent constipation are headachè; feverishness; pressure; urging desire to evacuate the bowels without result, or complete torpor without desire; depression of the mind; disturbed sleep; uneasy breathing; piles and enlarged veins; perhaps vomiting.

The causes, in most instances, are faulty habits in the patient, the regulation of which will afford relief. The faults in question are sedentary habits; smoking tobacco; drinking beer or other alcoholic stimulants, or tea; the use of fine flour to the exclusion of the coarse part of the grain; taking too dry food and too few vegetables; neglect in attending to the calls of nature to relieve the bowels; loss of tone in the mucous lining of the bowels from the use of purgatives. It also arises from disease in other parts, as the liver, brain or spinal cord.

TREATMENT.—In treating this disorder, the first thing necessary is to correct all irregular habits, avoid those things which predispose to the disease, and select such articles of diet as will tend to a healthy state of the bowels. Meals should be regular, animal food be used sparingly, and fruit and vegetables freely. Oatmeal gruel with molasses may be taken for breakfast. Brown or Graham bread should be taken in preference to white, and, if not used exclusively, a little should be eaten at each meal. Water is extremely valuable as a beverage, and for external use. Cocoa nibs may be substituted with great advantage for coffee and tea. Spirituous liquors, highly seasoned food and late suppers should be strictly avoided.

Friction over the abdomen tends to remove flatulence, and rouse the sluggish condition of the bowels. The abdominal compress, or bandage of cold water, for strong and young people is an excellent adjunct. This consists of a bandage sufficiently wide to cover the abdomen, and long enough to go around the body, and cover that portion that has been wet. Apply on going to bed. Rub the abdomen in cold water and dry with a coarse towel, after removing the bandage in the morning. This compress should not be worn by aged or weakly persons, or by women during the menstrual flow. An indication of its suitability is an agreeable warmth which follows in five or ten minutes after the application. If this reaction does not take place, and the compress remains cold, it should not be used.

The bowels, like the stomach, are under the control of nerves of time,

and consequently are subject to habit. Therefore, a regular hour each day should be fixed upon for their evacuation; by bringing the mind to bear at that time, the habit will soon be established and give notice at the time of nature's call. The best time is soon after the morning meal.

In obstinate cases, it may be necessary, until the habit becomes established, to use some mechanical means to assist in removing the contents of the bowels. Especially is this the case when the lower bowel has become obstructed with matter too large or too hard for its discharge. The best means to accomplish this will be the use of about a pint of tepid water slowly injected into the bowels; this may be retained some time, if possible, and, if not effectual, may be followed by another of the same character. This is far better than a cathartic, and attended by no bad results. Another and very effective expedient is the introduction into the bowel, at night on retiring, of one or two ounces of sweet cream or olive oil, allowing it to remain till morning. This is especially efficacious in the case of young children. Regulate the quantity according to age.

Nux vomica stands at the head of all remedies for this disorder. The symptoms for its use are habitual constipation, with frequent ineffectual attempts to stool; nausea; congestive headache; irritability of temper; disturbed sleep; also, when this trouble is an accompaniment of indigestion, the use of alcohol, tobacco, or coffee, or sedentary habits.

Bryonia.—Chilliness; throbbing headache; pain in the right side; and when there is no inclination to stool.

Lycopodium.—Rumbling and flatulence; full, distended abdomen; heartburn; water brash; difficult evacuation. This remedy has obtained its greatest results in the constipation of infants, and a dose once or twice a day usually acts like a charm.

Plumbum applies to obstinate cases, and, when there is a paralytic condition of the bowels, there is none better. The symptoms for its use are unsuccessful efforts to evacuate the bowels, with a painful and constricted feeling about the anus; motions dark, and passed in small balls.

[*Hydrastis* (golden seal), five drops of the tincture every morning before breakfast, will relieve the most obstinate constipation due to catarrh of the intestines.—HALE.]

Sulphur.—Habitual constipation, with flatulence and piles.

Opium.—Complete torpor of the bowels; the motions hard and lumpy; headache; drowsiness; feeling of constriction in the lower intestine. This remedy is well adapted to aged people.

Pulsatilla.—Symptoms similar to those of *nux vomica*, when occurring in people of light complexion after using oily food, accompanied with chilliness and a nervous, melancholy state of mind.

Constipation often results from a lack of the coarser articles of food, and there are but few instances in which relief cannot be obtained, with the appropriate remedy, by mixing a tablespoonful of wheat bran in a glass of cold water and drinking before breakfast. This will not interfere with the appetite, and if persisted in, can be used as a means of keeping the bowels in a proper condition. Sometimes a pinch of common salt added makes it more palatable and effectual. A cup of hot water, or hot milk and water, taken on rising, will often effect the same result, and in some cases is preferable.

The various remedies for chronic constipation should be taken only once or twice a day, and be persisted in until the difficulty is relieved, or the symptoms have changed, requiring some other remedy.

DIARRHŒA.—PURGING.

This consists in frequent, excessive fluid evacuations from the bowels, arising from some irritation which increases the ordinary action of the intestines, or the secretions from their lining membrane. It usually depends upon defective absorption of the intestines, so that an excess of matter passes through them, and less is taken up for the nourishment of the body. There are several forms, including irritative diarrhœa, from excessive, stimulating, irritating or impure food or drink; congestive or inflammatory diarrhœa, from a cold, cold drinks or ices when the body is overheated, checked perspiration, or suppressed discharges; bilious diarrhœa, or discharges of undigested food, from lack of assimilation; chronic diarrhœa, and summer diarrhœa. There are many influences which give rise to the different forms, the chief among which are sudden atmospheric changes, indigestible food, raw vegetables, unripe fruit, checked perspiration from exposure to cold, great fatigue, and sometimes violent emotions, as anger and fright. The causes do not affect all alike, some being able to eat articles with impunity which are directly productive of diarrhœa in others.

It is usually attended with nausea; flatulence; griping pain in the bowels, followed by loose discharges which may vary in character, being fluid or watery, slimy, bilious or bloody, and of a great variety of colors and odor; furred tongue, foul breath and acrid belchings are usually present.

In summer diarrhœa, or cholera, the discharges are chiefly bilious; there will often be violent pain, cramps in the limbs, great prostration, and not unfrequently collapse and death.

The main cause of diarrhœa, next to the use of indigestible or improper food, is atmospheric influence, and hence it prevails to such an extent during the summer months, while we have excessive heat through the day,

with chilly nights and mornings. Bad drainage and the impurities existing in our rivers and springs provoke the disorder. Impure water is a very frequent cause, especially when contaminated with decaying animal matter, sewerage and sewer gases.

It often accompanies other diseases, as typhoid and hectic fevers, consumption, chronic malarial diseases (when it is called colliquative diarrhœa, because it appears to melt down the substance of the body). It is often a precursor of cholera when that disease prevails, and should command immediate but calm attention.

TREATMENT.—An important point in treatment of diarrhœa is the selection of a proper diet. Food should be given sparingly, and consist of light, non-irritating articles, such as gruel, rice, arrowroot, milk if it does not disagree, milk and lime-water, and when there is thirst and fever, it may be iced; occasionally soda-water substituted for the lime-water. In prolonged or chronic cases, the diet should be more nutritious but restricted to the most digestible kinds of food, as mutton, chickens, pigeon, game, and white fish not over-cooked. Beef, pork, and veal and all tough portions of meat should be avoided. Mucilaginous drinks should be used, as barley-water, gum-water, and rice-water.

Camphor.—In sudden and recent cases, with chilliness; cold creeping of the skin; severe pain in the stomach and bowels; cold hands and face. This remedy acts promptly and its greatest effects are experienced in the commencement of the disease, when it often gives immediate relief. One or two drops may be given on a little sugar, repeated every fifteen or twenty minutes for three or four times. It should not be continued long.

Arsenicum.—Diarrhœa with vomiting; heat in the stomach; burning sensation attending the discharges; griping pain in the bowels. Its greatest results are experienced in cases attended with extreme prostration, emaciation, coldness of the extremities, pale and sunken cheeks and great thirst.

Iris versicolor.—English cholera, or summer diarrhœa, bilious evacuations, vomiting and headache.

Chamomilla.—For children particularly; bilious diarrhœa, attended with much pain, drawing up of the limbs; furred tongue; thirst, and want of appetite; irritable temper; during teething.

Dulcamara.—Diarrhœa from cold or wet, evacuations slimy or bilious, worse at night; particularly adapted to cases of this character during the summer and autumn.

Pulsatilla.—When resulting from rich or fatty food; bitter taste in the mouth; nausea and belchings of oily, acid matter; mucous diarrhœa, especially of children.

Veratrum album.—Copious, dark, watery evacuations; cramps; great thirst; vomiting; coldness of the body; rapid sinking; cholericine.

Calcareo carbonica.—Chronic diarrhœa, with weakness and emaciation. It is especially useful in scrofulous persons.

[Rhubarb, so much used as a laxative, is one of the best remedies for a mushy, sour, griping diarrhœa; two or three drops every two hours.—HALE.]

Rest in the recumbent position in acute cases is desired. The extremities should be kept warm, and when there is severe griping pain, heated flannel applied to the abdomen is very grateful. People subject to this disorder should always wear flannels; also a flannel bandage fitting the abdomen closely; this sustains the parts, and removes the feeling of great weakness which is so common.

Night air, late hours, mental excitement, and prolonged exertion should be avoided. Taking moderate exercise, and shunning all exciting causes in food or clothing, will tend to overcome this troublesome complaint. Sometimes, in the chronic form, a change of climate becomes necessary.

DYSENTERY.

This serious disease consists in an inflammation of the mucous membrane lining the large intestine, followed by ulceration, attended with griping pain, and a sense of contraction in the lower portion of the bowels, and causing a constant desire to go to stool. This inclination is entirely independent of the existence of any substance in the bowels, and the effort is rarely followed by any discharge except mucus and blood.

The disorder is usually ushered in by a chill, followed by continued fever, which is worse at night. The skin is hot, the face flushed, and the pulse quick. There is great thirst, with furred tongue, nausea and vomiting.

The most troublesome symptom is the bearing-down, pressing pain which causes the frequent urging desire to go to stool. The patient is unable to pass anything except a little mucus and blood, shreds of fibrin resembling the coating of the bowels, and sometimes small hardened balls. This feeling often extends to the bladder and produces frequent efforts to empty it. The straining is often very great, and children, when allowed to remain at stool, have brought on protrusion of the bowel; this may also occur to adults, when the disease has continued for some time, or if the patient is very weak. The hemorrhage is often very profuse and produces extreme prostration and danger.

The causes are varied, but there is little doubt that it arises from a specific poison in the blood, which affects the glandular structure of the large

intestine, and Maclean says he believes this poison is "a malaria generated in the soil by the decomposition of organic matter."

It is infectious, the effluvia from the stools conveying it to others, if they use the same vessel, or allow the stool to remain in the room. Exposure to cold and damp, sudden changes in temperature, insufficient clothing, a poor or irregular diet, and intemperance, are exciting influences. It is therefore often epidemic among people reduced by want and privation.

TREATMENT.—This malady should at all times be under medical care; until such is obtained, the following remedies may be given:

Aconite.—In the commencement, for high fever; quick, full pulse; thirst. It should be given often during the first hours of the disease.

Belladonna.—Also at an early stage, for sharp, shooting pains; great bearing down, and urging to stool; pains coming on and going off suddenly; flushed cheeks; dry tongue; pain in the head; tenderness of the abdomen.

Mercurius corrosivus.—This remedy is of great value when the discharges are mostly blood, with severe straining before and after stool; urine scanty and passed with difficulty, with constant pressing desire to void it. This remedy may be alternated with belladonna if high fever accompanies the above symptoms.

Colocynth.—After or in alternation with mercurius corrosivus, especially if there be colicky pains; abdomen bloated; discharges mucous mixed with blood; efforts to vomit, without success.

Ipecac.—Autumnal dysentery, with nausea and vomiting; discharges frothy and foul, and sometimes greenish mucus, and bloody.

Bryonia.—Pains and desire for stool, aggravated by moving about; tongue white; aching of the whole body; intense thirst for large draughts of water.

[Hamamelis is very useful if the passages are composed of much dark-colored blood.—HALE.]

Arsenicum.—A very important remedy in the last stage, or in those cases where there is great prostration with tendency to collapse, especially if the patient is enfeebled by previous disease. The characteristic symptoms for its use are great thirst; cold breath; tongue blue; cold, clammy sweat; excessive weakness; anxiety and restlessness; abdomen feels full and bursting before stool; after the discharge, burning in the rectum, trembling of the limbs and exhaustion. The discharges are putrid and the urine offensive, greenish, and passed with pain.

The care of the patient is of the greatest importance, both in his diet and his surroundings. The recumbent position should be maintained, and, in severe cases, the bed-pan should be used instead of having him get up,

efforts having been made to resist the desire to go to stool as much as possible. The excretions should be removed at once from the house and the vessel or pan be thoroughly cleansed before using again. The abdomen should be protected by flannel cloths, and when there are tenderness and much pain, warm fomentations or a poultice of flax-seed, hops, or corn meal and salt, should be used. The diet should consist entirely of fluids, with drinks of barley-water, arrowroot, soda-water and milk, flax-seed tea, and rice-water. These should be given cold and continued until improvement has been fairly established, when chicken, beef, and other meat-broths may be taken. A return to solid food should not take place until the discharges have become quite natural, and then be used with great caution.

[Cool drinks often cause pain. In such cases, hot drinks and large hot injections of water, rice-water, or even mutton broth, frequently relieve very promptly.—HALE.]

SIMPLE CHOLERA.—CHOLERA MORBUS.

There are two diseases called cholera, simple cholera or cholera morbus, and Asiatic cholera. The former, the milder and less fatal, has several characteristics which distinguish it from the latter.

Cholera morbus is ushered in by vomiting and purging, and often severe pain in the bowels. The discharges are bilious in their character and of a yellowish, brownish or greenish color. This feature distinguishes it from malignant cholera, which has the white or rice-water discharges. It is often a very serious complaint, and if unchecked, cramps in the stomach and bowels may set in, followed by collapse and death. This is especially the case in people advanced in life and those with constitutions reduced by intemperate habits.

TREATMENT.—This disease should be under medical care, the following remedies being used until such care can be secured.

Camphor is one of the best remedies in the commencement of an attack, and is indicated by chills; diarrhœa; spasmodic pains in the bowels. It should be given at frequent intervals, and is often sufficient to cure the disease in the early stage.

Colocynth.—Severe, griping pains, as though a knife were piercing the body.

Veratrum album.—Sudden, violent attacks of vomiting and watery diarrhœa, with cramps and collapse.

Iris versicolor.—Greenish discharge, with colicky pains; nausea.

Aconite possesses wonderful power during the stage of collapse, and has saved many otherwise hopeless cases. The indications are death-like,

sunken appearance of the face, with failure of the heart's action. The dose is one to five drops of the strong tincture, according to age, given every ten to fifteen minutes until circulation is restored.

Complete rest in the recumbent posture should be secured, with warm applications to the abdomen, and the heat of the body be maintained by hot bottles and other means. Ice and ice-water may be given freely. The diet should be non-irritating.

CHOLERA INFANTUM.

Of all the diseases which strike terror to the mother's heart, this is perhaps the most appalling. Its progress is so rapid, and its results so fatal, that we do not wonder at the dread with which it is viewed. The necessity for prompt action when far from medical aid impels us to give full notes here, with the assurance also that the means recommended are often an anchor of safety when others fail; but it is sincerely hoped that no one, while following these directions, will delay a moment in securing the best physician that can be found.

Cholera infantum is peculiarly a disease of large cities. While country towns and farming communities may suffer from it, they are not attacked with that virulence which manifests itself in more thickly populated sections. Its chief causes are exposure to extreme heat, foul-air from unclean streets, poor food, and nervous irritation in teething. It more often attacks children who are fed on artificial food and cow's milk than those who are at the mother's breast. It comes on between the fourth and twentieth months and its characteristics correspond to those of cholera morbus. Its symptoms are severe vomiting; great pain in the bowels; cold extremities; purging, and very rapid prostration; bloating of the abdomen; tongue red and dry, or moist, and covered with a thick fur; head hot; eyes sunken, dull or glassy, and the lids heavy; the child is restless, moans constantly, and turns from side to side; great thirst; feeble pulse; the heart's action irregular; the loss of fluids is very rapid, and the kidneys consequently cease to secrete the urine. The blood thus becomes poisoned with urea, as indicated by delirium; rolling of the head; sharp or plaintive cries; squinting of the eyes; stupor; convulsions; and death, if not relieved.

This disease should not be confounded with catarrh of the intestines, though often accompanying it, and though children who are affected with the latter, and are subjected to the necessary conditions, sometimes contract cholera infantum. Intestinal catarrh, or summer complaint, may be distinguished by a comparison of its symptoms, given under *Diarrhœa*, with the above. It is strictly an inflammatory disorder, and does not entail that

rapid loss of fluids and sudden prostration which accompany cholera infantum; but the condition of the intestinal canal, and the exhaustion produced by it render the patient less able to resist an attack of cholera infantum. It is, therefore, imperative that one use all proper precautions in diet and medicine to cure any form of diarrhœa that occurs under any of the exciting causes named above. Those children who are exposed to the conditions that cause this fearful malady, whether any or all of them, while suffering from diarrhœa, are very apt to be attacked with cholera infantum, and usually fall victims to its terrible effects

TREATMENT.—Medical aid is always needed, the following treatment being given only as a safeguard until such help is obtained. In the treatment of this disease, as well as in its prevention, the food is an all-important consideration; for, unless great care is taken, the predisposition is increased, and the prospects of a cure diminished. We wish, therefore, to impress upon the attention of the mother and nurse the urgency of watchfulness in this particular. The milk from the breast of the mother or wet nurse is by far the best, if the one who nurses the child is well. Too much pains can not be taken to insure good milk. Mothers, and others who nurse children, too often neglect themselves, and, to gratify appetite or taste, use such articles of food or drink as are in many cases the direct cause of the trouble. Nursing the child when the mother is overheated or under strong mental emotions, as anger or grief, tends to derangements more or less serious. Giving the breast too often, so as to stop crying, is also a bad practice, for crying is very frequently an evidence of an overloaded stomach, and further feeding will be likely to induce more harmful results.

If the child is using other food than the milk of the mother or nurse, much pains are needed in the selection and preparation. Next to the human milk we place that of the cow. It should be diluted with hot water and be given warm; to insure good digestion, a little lime-water, or a pinch of salt, may be added. Some children can not use milk either in health or sickness, and then resort must be had to other articles. There is a variety of prepared foods, but, while a large proportion have some merit and are beneficial in individual cases, they do not contain the properties that will insure the universal health and flesh which their manufacturers claim. Barley well boiled and strained, meat-broths, gruels and arrowroot will often be useful, but in many instances, especially in children who have teeth, solid food is a necessity; for the act of chewing effects a due mixing of the saliva, and thus favors better digestion, while the juices in the stomach, secreted more rapidly in the presence of solid food, produce chemical changes which lessen the tendency to this disease. Soft food is not necessarily most easily digested.

The reader will do well to read what is said on the diet and feeding of infants in another chapter.

Ipecac is to be given when the disease is ushered in by copious vomiting; also for discharges from the bowels of undigested food and bile, and yellow coating on the tongue. If relief is not afforded, *veratrum album* may be used in alternation with ipecac for copious vomiting; diarrhœa, with colorless, mucous discharges; severe, cramp-like pains in the bowels. When the disorder commences with the list of symptoms last given, especially if the discharges are light-colored, the *veratrum* should be the first remedy given.

Arsenicum album, rarely indicated in the commencement, is one of the main remedies in a later stage, its symptoms being ineffectual efforts to vomit; discharges from the bowels more frequent, but decreased in quantity, and tinged with blood; difficult breathing; great thirst; pinched appearance of the features, with indications of collapse; cold, clammy sweat. It is especially useful if the discharges assume a gray or black hue, and become very offensive in odor.

Chamomilla is needed in the commencement in cases which are brought on by nervous irritation from teething or fright, its special indications being slight vomiting, with pain and profuse greenish discharges from the bowels. This remedy should be given for the looseness of the bowels in teething children which precedes cholera infantum.

Though *nux vomica* is not a remedy proper for cholera infantum, it has sometimes relieved this malady when it has been attended with lassitude and want of appetite; and it may often be used with very good results in toning up the digestive functions, and restoring a healthy state.

Bromide of camphor has great merit in allaying the nervous irritation which precedes or accompanies cholera infantum. It lessens the frequency of the discharges, and has sometimes arrested the convulsions which occur in some cases with such fatal results. It may be used with advantage, in connection with other remedies, to produce sleep and rest, one or two one-tenth grain doses being given daily.

[Bismuth often cures when all other means fail to arrest the disease, especially in the acute stage. It should be given in five to ten grain doses in a teaspoonful of water every hour.—HALE.]

ASIATIC CHOLERA.

No other disease presents as formidable a front in its treatment, or strikes such terror to individuals, nations, or the world, as the one in question. Its fatality is so great, and its attack is so soon followed in many

cases by death, giving little time to obtain relief, that it may well be looked upon with dread and dismay. It is a constitutional disease, but the local manifestations being exhibited in the digestive tract, it is placed for convenience in this connection. The discharges from the bowels do not indicate a special local disease of these parts; neither do we find any organic disorder of the intestines at all corresponding to the results of the disease. In the description of the digestive tract at the commencement of this chapter, we find that the intestines are lined with minute projecting papillæ, called the villi, which are so abundant as to give to the entire surface a beautiful velvety appearance. These villi have a two-fold function; they throw out certain fluids which aid digestion, and also act as absorbents, taking up the food to make new blood and repair the system. In cholera, these villi have lost their outer covering, so that the surface appears red and raw, out of which is thrown a constant and copious supply of serum, which forms the peculiar rice-water discharges from the stomach and bowels so characteristic of true cholera. This fluid grows thick, dark, and ropy; the coats of the intestines, owing to their changed condition, not furnishing a new supply, the fluids of the body are drawn upon, and a few hours of the disease cause extreme waste and emaciation. In fact, the obstructed capillary circulation, the blueness of the lips, tongue and skin, the long-continued cramps which contract the muscles into hard, round knobs, all arise from this general drying out of the system.

The disease is caused by a specific, contagious poison, whose exact character is unknown. It is epidemic and spreads over whole countries, its mortality being remarkably high.

TREATMENT.—Cholera usually commences with diarrhœa, and under no circumstances should looseness of the bowels be neglected during the prevalence or imminence of a cholera epidemic.

Camphor should be given at once when diarrhœa comes on, accompanied with nausea, griping pains, and headache, one or two drops being administered in a little water every five or ten minutes, and the intervals being lengthened as the symptoms abate. A like dose of the same once or twice a day is excellent as a preventive during the epidemic.

Veratrum album is a superior remedy, and should be given very soon after the disease commences, if camphor does not afford relief, and if the discharges are colorless, the attack coming on with vomiting, diarrhœa, great pain and restlessness.

When this condition so changes as to leave the patient apathetic or insensible, with cold skin and weak pulse, the remedy is no longer of avail. This stage calls for arsenicum, whose indications are sudden and complete exhaustion; pulse feeble or lost; violent palpitation of the heart; difficult

breathing; intolerable thirst, with an immediate vomiting of all fluids taken into the stomach; burning in the stomach and bowels; suppression of the urine.

Cuprum is one of the best preventives and should be given, alone or in alternation with camphor, during the prevalence of cholera. It is also a very valuable remedy during an attack, and will not only often prevent the paralytic stage, but is particularly indicated by that condition. Its special indications at this stage of an attack are loss of consciousness; twitching of the fingers and toes; gurgling of fluids in the œsophagus, with inability to vomit; suppression of the stools; loud gurgling in the bowels if they are pressed upon. This remedy may be given in alternation with any of the others named, particularly with *veratrum album* and *arsenicum*, when they seem to be indicated.

Aconite, when the attack comes on with great prostration and failure of the heart's action, should be given to rouse the vital forces. It will also be found an efficient remedy in the stage of collapse, the dose being one to five drops of the tincture every five to ten minutes until circulation is established.

The same general directions for diet and hygienic measures as are given for cholera morbus may here be mentioned, special care being taken to remove the discharges of the bowels and stomach at once, and to thoroughly disinfect the room. The discharges should not only be taken away, but should be promptly buried or burned, since they become more infectious after exposure to the air.

All decaying matters, cess-pools, water-closets, dust-holes, and drains should be thoroughly cleansed, and every means be taken to protect the body from unpleasant effluvia by a free use of disinfectants. The body should be well protected by clothing, care being taken to prevent catching cold, never allowing the feet to remain damp. Exercise in the open air and cleanliness of person are absolutely necessary among preventive measures.

PILES.

This disease is the result of enlargement of the veins in the lower portion of the large intestine. It is usually produced by pressure on the veins by collection of fæces in the bowel, which prevents the return of the blood to the heart, and causes distension of the veins, inflammation and pain. This condition persisting, the vessels gradually enlarge, and their coats grow thin, and perhaps burst, producing severe hemorrhage.

Constipation is the usual cause, but anything which may retard the progress of the blood in these veins is capable of producing the disease.

Sometimes the veins protrude and form a mass of painful tumors on the outside of the muscles of the anus. These tumors may vary from the size of a pea to that of a walnut, and when the pressure is sufficient, they become strangulated and present a purple or dark appearance. These conditions are not continuous, however, and often there will be long intervals in which they will not appear, and then give little or no inconvenience. The tendency is to repeated attacks, the veins becoming more and more distended and the tumors more prominent, until they are continually a source of annoyance and trouble. This is due, however, to the predisposing causes, which are quite general, as sedentary habits, and the free use of coffee, tea, wine, or other liquors.

TREATMENT.—The so-called “sure cures” for piles are legion, and many have waxed rich on the discovery of great pile remedies, the most of which are indeed great in lining the pockets of their inventors with the shekels of poor deluded sufferers. We will enumerate but a few medicines, advising the patient to consult some reliable physician for treatment in this troublesome complaint.

As a constitutional remedy, sulphur is the best. It should be taken once a day for one week, then discontinue a week, and so on every alternate week.

Nux vomica.—If from constipation, or the too free use of spirituous liquors, and sedentary habits.

Hamamelis is excellent for bleeding piles, and is to be used both internally, in the usual form of administration, and also externally. For the external application, put on the affected part two or three folds of linen saturated with Pond’s Extract of Hamamelis, cover the whole with oil-silk, and repeat the application several times a day.

Æsculus.—Bleeding piles, with much pain in the rectum, and also in the back and loins.

Aconite, if there be much inflammation and fever.

During an attack, the horizontal position is the best, and should be maintained as much as possible.

Great relief and permanent benefit will be derived from the use of injections of about a pint of tepid water into the bowel, before an evacuation. This softens the fæces, and also contracts the tissues, giving tone to the blood-vessels and nerves. When very painful, a sitz-bath, or sitting over steam, will give relief. The parts should be kept strictly clean by frequent washing with pure castile soap and cold water.

The abdominal compress is an excellent preventive and will do much toward restoring the organs to a healthy condition when the complaint has already become seated. To apply it, take a long bandage, wet one end in

cold water, and wrap it smoothly around the abdomen several times, in such a way that the upper dry folds will neatly cover the wet ones beneath.

Surgical measures should be the last resort, and, while sometimes necessary, are not often required after a thorough use of the remedies recommended above.

Various pile salves have gained more or less reputation, among which we may mention, as being safe and productive of good, *æsculus cerate*, *hamamelis cerate*, and the Perfect Pile Remedy. They may be obtained at any well-appointed drug-store.

The diet is of great importance in the treatment. Coffee, tea, spices, stimulating, highly-seasoned or indigestible food, wine, beer, and spirits in general, should be avoided. The best diet consists of light animal food and the free use of ripe fruits and vegetables.

JAUNDICE.

This is rather a symptom of disorder of the liver than a distinct disease. It consists in a discoloration of the skin from a yellowish deposit beneath it of the coloring matter of the bile.

It is caused in two ways: First, by obstruction of the secretion of the bile in the gland; second, by some deranged action of the constituents of the blood. The former cause is the best known, and is the result of some mechanical obstruction to the excretion of the bile, necessitating its re-absorption into the blood. The principal predisposing causes are a sedentary life, stimulants, strong mental emotions, the use of purgatives, exposure to cold and wet, injury to the liver by a blow or fall, clogging of the large bowel from constipation, and formation of stones in the gall-bladder. The last is usually accompanied with such severe pain, while the stones are passing through the gall-duct, that it is readily recognized.

The symptoms which are noticeable in jaundice are yellow skin; the white portion of the eye tinged a yellow-greenish hue; weak pulse; languor; bitter taste; constipation; often nausea and vomiting; urine dark-brownish or greenish yellow; the discharges from the bowels of a gray-ash color and very offensive.

TREATMENT.—*Aconite*.—If there be much fever and thirst; and if caused by cold or inflammation of the liver, or by fright.

Bryonia.—Stitching pain in the liver on pressure; pain in the limbs, worse on motion; thick white coating on the tongue; nausea and vomiting.

Chamomilla.—When occurring in new-born children, or when caused by anger, imprudent diet, or taking cold.

Mercurius is more often indicated than any other. The symptoms calling for it are thick, coated, flabby tongue, showing the prints of the teeth; bad smell from the mouth; nausea and loathing of food; soreness and sense of fullness in the region of the liver; diarrhœa, with mucous discharges. [Euonymin cures the same symptoms, the dose being one-eighth to one-half grain every four hours.—HALE.]

Nux vomica.—Derangements of the stomach; constipation; the presence of gall-stones; headache; dizziness; loss of appetite; nausea; vomiting. This remedy is especially indicated in cases arising from sedentary habits, from the use of alcoholic stimulants, tea and coffee, or from anger.

Podophyllin.—In complication of gall-stones; great pain in the region of the stomach, extending to the liver. [Also chelidonium.—HALE.]

Arnica.—When jaundice is the result of an injury.

[Chionanthus is a specific in chronic cases, five drops every two hours.—HALE.]

When this disease is attended with a considerable disturbance of the system, medical aid should be consulted, that the cause of the trouble may be ascertained. The diet should consist of fruit and vegetables, to the exclusion of meat and rich pastry. Efforts should be made to promote free action of the skin, and thus eliminate the poisonous bile as much as possible. This can be accomplished by the hot bath-pack and brisk friction of the surface of the body.

INFLAMMATION OF THE LIVER.

The liver, like other organs of the body, is subject to inflammation, which may be either acute or chronic, and, though it is made the scape-goat of most of the disorders of the stomach, under the name of "biliousness," which Dio Lewis terms "hoggishness," it is occasionally subject to an inflammation or congestion independent of other organs. This inflammation is indicated by a dull pain, sometimes sharp and cutting, in the right side, extending to the liver, with great tenderness on pressure. The liver seems enlarged, and there will be difficult breathing; loss of appetite; cough and vomiting; indigestion; yellowish hue of the skin; in the chronic form, usually unaccompanied with fever. This affection is quite common in hot climates, in consequence of heat, the use of stimulants, and mental emotions.

TREATMENT.—Aconite should be given in the acute form, when there is much fever.

Belladonna is an excellent remedy for acute pain in the region of the liver, made worse by pressure, lying on the right side, coughing or breath-

ing; pain extending toward the shoulder and neck; congestion of the head; giddiness; sleeplessness; tense, bloated feeling in the region of the stomach.

Bryonia.—Stitching and burning pain, worse from motion and contact; white coating on the tongue; thirst; constipation; pain in the right shoulder; fullness of the abdomen; yellowish appearance of the face.

Leptandrin.—Yellowish coated tongue; constant nausea and vomiting; dark-colored urine; black mushy stools.

Mercurius.—Pressing pain and stitches in the liver; inability to lie on the right side; yellowish tinge to the skin; perspiration; alternate chills and flushes of heat when changing position.

Phosphorous acid.—When the patient is greatly reduced, with tendency to blood-poisoning from abscesses.

Pulsatilla.—Attacks of anxiety at night; greenish, slimy, diarrhœa; and when the cause is sudden suppression of the menses.

Local applications often give great relief, especially in an early stage; the most efficacious of which, when the disease is accompanied with severe pain and high fever, is a lotion of aconite, one-half teaspoonful of the strong tincture to three or four ounces of water. Cloths wet in this should be applied hot, and be covered with oil-silk or several folds of flannel. Mustard plasters often afford relief. When the enlargement continues, accompanied with severe pain when lying on the left side, a plaster of cantharis may be applied, allowing it to remain until it forms a blister. The last expedient has, in the author's own experience, prevented the formation of abscesses when this result seemed otherwise inevitable.

GALL-STONES.

Gall-stones are the result of a secretion or deposit in the gall-bladder of substances which are contained in solution in healthy bile. Sometimes gall-stones are formed in great numbers, but usually from five or ten to thirty. Their size varies from that of a millet seed to that of a hen's egg. Their color is also varied: sometimes white; again, all shades, to a deep black.

The presence of gall-stones may not be known for a long time, and then only when their passage through the duct leading into the duodenum brings on violent symptoms, known under the name of "bilious or gall-stone colic." This usually occurs a few hours after eating, when the bile is poured into the bowels, or upon lifting heavy weights, or after violent emotion. The pain is excruciating, of a boring and burning character, is first felt in the right side, and extends to the navel, back to the spine, and upward into the chest and shoulder blade; the slightest touch increases the pain; there

will be vomiting; great restlessness; sometimes convulsions; the colic continues with more or less severity until the stone is passed through the duct, when it suddenly ceases. This passage may last only a few hours, or may continue several days, with frequent paroxysms of pain. After the passage of the gall-stone, if the flow of bile has been obstructed, the eyes and skin sometimes take on a jaundiced hue.

TREATMENT.—The extreme pain accompanying this disorder usually brings it under the care, and properly so, of medical aid; but as such aid is not always at hand, the patient should at once be treated with belladonna.

Baptisia.—Pain in the right side, with great uneasiness; the patient obliged to move about, although the pain is increased thereby.

China.—Periodical attacks of colic; yellow skin; constipation; greenish stools, passed in the form of sheep-dung of different sizes.

Chelidonium has long been used in the various disorders of the liver, and is especially efficacious in this one. It should be given in five to ten drop doses three times daily, and if continued some time, will dissolve stones already formed, and prevent their re-appearance.

One of the most efficient remedies, and one which is usually at hand, is the ordinary olive or sweet oil. This is not only said to dissolve some forms of the gall-stones, but also causes the duct to relax and thus allow the stone to pass through the more easily. It should be given, during an attack of pain, in doses of one-fourth to one-half pint, and repeated at intervals, if the stomach will retain it, until the pain ceases.

INFLAMMATION OF THE BOWELS.

This formidable disease we present for two reasons: First, that the order may be complete; and second, to so describe its symptoms that medical aid may be at once obtained. It is not a disease which should come within the province of domestic treatment, except under great and pressing necessity. The suddenness of its attack, the rapidity of its course, the extreme fatality under the old system of purgatives, all show the necessity of skilled and prompt aid.

This disease is preceded by chilliness; dry, hot skin; quick pulse; great thirst; nausea; sometimes vomiting; pain in the bowels, centering at the navel; extreme soreness upon pressure; the patient lies on his back with the knees drawn up; the abdomen feels stiff and, after a short time, may become swollen or drum-like. Peritonitis, or inflammation of the lining membrane of the abdomen, may attend this disorder. The principal causes are cold; improper diet; strong drinks; fevers.

TREATMENT.—The patient should be placed in bed, in a well-lighted,

well-ventilated room, and be induced to maintain a recumbent position, using the bed-pan instead of sitting up. Applications to the abdomen afford great relief, and there is none better than a compress of three or four folds of linen, large enough to cover the abdomen, wrung out in cold water, spread upon the abdomen, and covered with a bandage of flannel. This is much better if the compress is first covered with oil-silk. If there is very severe pain, a hot poultice or flannels, wrung out in hot water, will be found very useful. A superior local application is a flax-seed poultice, sprinkled over with mustard. Make it so as to cover the abdomen, and cover it with oil-silk, putting on the whole some cotton batting.

If the bowels have been constipated, or there is evidence of clogging of the large bowel with hardened fœces, an injection of warm water should be given, great care being used in its administration. The best manner is to first gently introduce into the bowel a half-pint of the fluid, requiring the patient to retain it half an hour, then follow with another and larger amount; usually this will be followed by a free discharge. After the evacuation has become free, the temperature of the injection may be lowered. If the discharges become mucous and bloody, starch-water, gum-water or flax-seed tea may be used with good results. The drinks should be mostly cold, and when the heat and thirst are extreme, pieces of ice may be held in the mouth.

Belladonna is indicated, at an early stage, by sharp, shooting pains coming on suddenly and leaving quickly; great bearing down, and tenderness, on pressure over the abdomen. Aconite, also in the early stage, if there is great fever.

Arsenicum.—Severe burning pain around the navel, with obstinate vomiting and prostration.

Mercurius corrosivus.—Often a very efficient remedy when the discharges are mucous and bloody, accompanied with straining and constant urging to stool; abdomen hard and distended; frequent painful desire to urinate.

Veratrum album.—Great thirst; furred tongue; nausea; vomiting; great prostration; cold extremities; cramps.

When the inflammation subsides, beef-tea, milk and soda-water, or any easily digested fluid food, may be allowed, care being taken not to return to solid food until the patient has fully recovered.

PERITONITIS.

Peritonitis is an inflammation of the lining membrane of the abdomen. It may be local, affecting a particular portion of the sac, or general, spread-

ing over the whole abdominal surface. It is caused by a blow, fall, wound, surgical operation, exposure to cold and wet; it may follow inflammation in other organs, as the liver, spleen, womb, bladder, and intestines; child-bed fever is also one of its causes. Having so many sources, it displays a variety of symptoms, of which only those that are common can now be given, though they will be sufficient to decide upon the existence of the disorder.

Pain and tenderness are always present, the pain being sharp, tearing, and increased by motion or the slightest touch. The patient lies quietly on his back, with the feet drawn up, using the muscles of the abdomen as little as possible when breathing. Vomiting is a prominent symptom, and when the bowels are obstructed, their contents are raised; vomiting does not relieve, but rather increases the pain by the straining. Other symptoms are hiccough; constipation; usually great distension of the abdomen, so that it sounds like a drum if one taps upon it; constant and painful desire to urinate, the urine being hot; intense fever; pulse generally very rapid. When the disease progresses in spite of treatment, the pulse gradually grows small and flickering, the extremities cold and covered with a clammy sweat, the tongue dry and red, the features anxious and drawn, and death soon follows. A serous deposit sometimes forms under the membrane involved, and the patient then does not fully recover for a long time after the inflammation subsides. Prompt and efficient treatment is essential, as the disease is liable to rapidly become dangerous. It occasionally terminates in an exudation of pus into the abdominal cavity. Its intense soreness and tenderness will distinguish it from colic; but a minute comparison of symptoms is requisite to avoid mistaking it for inflammation of the bowels.

TREATMENT.—Arnica, both internally and externally, is to be given when an injury is the cause.

Aconite, if there be high fever; hot and dry skin; hard, quick, small pulse; dry mouth and tongue; great thirst; vomiting; cold extremities; scanty, red and hot urine; burning, cutting and darting pain in the bowels; abdomen very hot, and tender to the touch. This remedy is especially useful when the disorder arises from exposure, a cold, or taking cold drinks when the body is heated.

Belladonna is needed after aconite if the head is suffused with blood, the cheeks flushed, the eyes red, and the blood-vessels strongly throbbing; constant and painful retching and vomiting, worse from motion and contact; great difficulty in breathing.

Rhus is indicated by great restlessness; constant changing of position, though the pain is increased thereby; tongue red at the tip; pressing, cutting pain in the abdomen.

Veratrum album, for vomiting and diarrhœa; cool skin; sunken features; small, weak pulse; great thirst; anxiety.

Arsenicum, in a later stage, for sudden sinking of the strength; extremities cold and covered with a clammy sweat; intense thirst, with small drinks at a time: persistent vomiting; burning sensation in the bowels; symptoms all worse at night.

Hot fomentations will relieve the pain. Cold applications are sometimes more agreeable, and may then be used. Bran or linseed-meal poultices are often productive of good. When the tongue is red and dry, the abdomen much distended, the urine scanty and passed with difficulty and burning pain, applications of turpentine will be of much value; use it by putting one tablespoonful of turpentine in a pint of boiling water, and laying on the abdomen cloths wet in this solution. The flax-seed and mustard poultice recommended for inflammation of the bowels is also valuable.

The diet should be very light, consisting of milk, water-gruel, and like articles. Water should be taken quite frequently, but in small quantities. When the inflammation subsides and convalescence begins, a more strengthening diet may be provided, but solid food and meat should not be included until the patient has quite recovered.

WORMS.

Of the several varieties of parasites which infest the human body, there are three kinds which are usually known under the appellation of worms. To these many of the disorders of childhood are ascribed, and though the best evidence of their presence is their having been seen, this is not always considered. Many times a stomach that is weakened by disease or improper food, is still further deranged by nauseous drugs, under the name of vermifuge. The patentee grows rich, but the poor child suffers from the false impression that all children have a "patent right" on worms.

The most common of these parasites is the thread or pin worm. They usually occupy the lower portion of the large intestine, and may be conveyed from one person to another by contact. After the patient is warm in bed, they may be seen around the anus, sometimes in masses of considerable size, like a ball; they will migrate from the bowel to the vagina, and when attached to the folds of the bowel or vagina, produce intense itching and annoyance. It is believed, and there is little doubt of its truth, that the larvæ are deposited on the outside, where they hatch and then enter the bowel ready to propagate again. In addition to the itching, the symptoms of their presence are irregular appetite; offensive breath; picking the nose; straining at stool; disturbed sleep, and restlessness.

These pests are easily removed if care is given to apply the following means: Inject into the bowels a solution of salt and water, three or four ounces every day for three days, then two or three times a week; wash the external parts after each discharge, and anoint well with carbolated cerate,

The next in frequency of these parasites is the stomach or round worm. It measures in length from three to fifteen inches, and in form resembles the common earth-worm, though a pale yellow-white in color. It occupies the small intestines, but sometimes passes into the stomach, and is vomited up, or enters the large bowel and is passed with the contents at stool. The chief symptoms of its presence are pain and swelling in the abdomen; variable appetite; foul breath; itching of the nose; paleness about the mouth, with red cheeks; diarrhœa; restlessness and grinding of the teeth during sleep; spasms. They occur in children between the ages of three and ten years. Their presence is not always certainly proved by the symptoms named, for the latter may arise, even in the absence of worms, from the same influences which generate the parasites. The only certain sign, therefore, is their passage from the bowels, or their expulsion from the stomach by vomiting.

The third class, and the most rare, is the tape-worm, which is made up of a series of flat links and sections, which vary in size and length from an eighth of an inch to one inch in length, and from a mere thread to half an inch in width; these sections or joints aggregating from a few feet to several yards. The symptoms of its presence are not well marked, and many times it is not discovered until some of the sections are found in the stool. One symptom, however, which is usually noticeable is an enormous appetite, yet with emaciation. This will lead to a careful examination of the evacuations, and the discovery of the intruder. There will also be a general lassitude, and an itching of the nose and anus.

TREATMENT.—The treatment of tape-worm is always to be under the direction of a skilled physician; nevertheless one may have hope of expelling it by the following course:—Abstain from food during the day; at night, take one and a half ounces of pumpkin seeds in a little milk or cream; in the morning, upon rising, an ounce more, followed in two hours by from one to two tablespoonfuls of castor oil and a half teaspoonful of sulphuric ether, mixed. If the bowels do not move within four or five hours, take an injection of warm water, and generally the offender will be found in the discharges.

Worms are usually due to a morbid condition of the digestive function, from an unhealthy state of the membrane lining the intestine, causing them to secrete in large quantities a slimy mucus, which not only retards digestion, but also forms a fitting receptacle for the rapid development of

the worms. This should be thoroughly understood, for when the intestinal canal is in a healthy condition, worms cannot exist.

Cina is a valuable remedy, and often removes the conditions which favor the formation of worms. The indications for its use are a boring at the nose; dark rings under the eyes; restlessness; crying out in the sleep; nausea and vomiting; griping; itching at the nose and anus; convulsions; thick, white urine, sometimes passed involuntarily.

Santonine is efficient, and, in doses of half a grain once a day for three or four days, will expel the larger kinds of these parasites.

China.—Thread-worms with tendency to diarrhœa; pale face; dark rings under the eyes.

Calcareo carbonica.—In weak, delicate children, having a predisposition to worms.

The diet, in all cases of trouble from worms, is of much importance. The food should be taken at regular hours only, and should consist of easily digested, well cooked articles, with a careful exclusion of cakes, pastry, sweetmeats, butter, veal and pork. Raw meats should never be eaten, for in them the eggs from which the worms develop are often taken into the system.

PROTRUSION OF THE RECTUM.

The protrusion of the lower bowel occurs mostly in children, but may be found in later life. Though its causes are varied, it usually arises from a debilitated state of the system, and follows protracted attacks of diarrhœa, dysentery and piles, as well as anything that will cause a relaxation of the muscles about the anus. The portion of the bowel which protrudes is often thickened and granular, and sometimes ulcerated from rubbing the thighs and clothing; a film of mucus sometimes forms on its surface. When a serous or bloody fluid settles in the tissues, great difficulty is experienced in returning the bowel to its place.

TREATMENT.—The essential points of the treatment are the removal of the cause, and the immediate replacing of the bowel. The protruding part should be gently pressed back beyond the muscle which controls the opening of the anus, the hand of the operator being previously well oiled, whether the patient or another person does it. The patient should lie on his back for some time afterward, to insure a complete restoration of the rectum to its normal position.

If the disorder is due to a low state of the system, the body must be invigorated by proper diet, bathing in cold water, moderate exercise, and general care. If constipation be the cause, regulate the bowels by proper food and injections, avoiding cathartics and straining at stool. If diarrhœa

be the occasion, treat that, particularly teaching children so affected to avoid straining at stool, and giving them an injection of cold water before the discharge.

Podophyllin is a superior remedy, and few cases fail to yield to it readily and permanently, if the measures mentioned are observed for properly returning the bowel.

Ignatia should be given to infants who have itching and straining at stool, with frequent ineffectual urging to evacuate the bowels.

Nux vomica is to be used when the disorder arises from constipation and straining at stool.

External and internal anointing with the Perfect Pile Cure will aid very much in the treatment of this troublesome disorder. It contracts the coats of the bowel, lessens the inflammation, and gives tone and strength to the parts.

The diet should be plain and nourishing, including such articles as favor the normal action and condition of the bowels.

It is best by far to put chronic cases under the care of a skillful physician, for it is sometimes necessary to resort to mechanical means to retain the bowel in position after it has been returned.

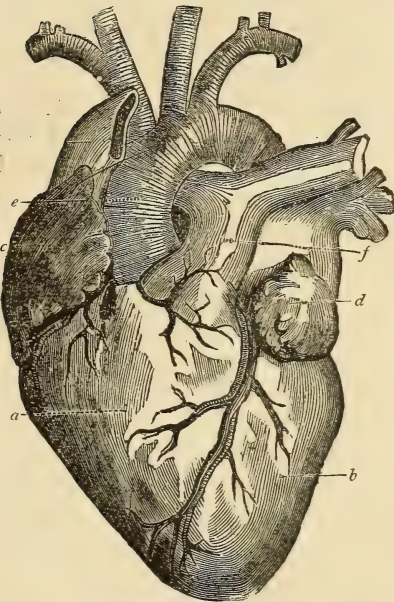


CHAPTER V.

THE ORGANS OF CIRCULATION.

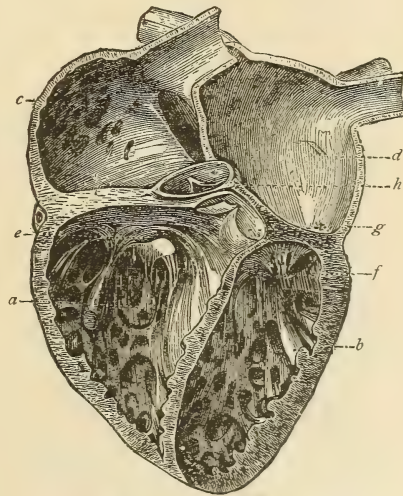
ANATOMY AND PHYSIOLOGY.

THE circulation of the blood is the most active and most evident manifestation of life, as it is one of the most wonderful. Indeed, the blood in motion we are accustomed to speak of as life itself, since we know that death speedily ensues upon the cessation of its circulation. Again, it is often remarked that the body grows by the food which is



26. THE HEART AND BLOOD-VESSELS.

A.—Right Ventricle. B.—Left Ventricle.
C.—Right Auricle. D.—Left Auricle.
E.—Aorta. F.—Artery to the Lungs.



27. CHAMBERS OF THE HEART.

A.—Right Ventricle.
B.—Left Ventricle.
C.—Right Auricle.
D.—Left Auricle.
E, F.—Openings into the Ventricles.
G.—Artery to the Lungs.
H.—Aorta.

taken into the stomach; but by reference to the description of the exceedingly interesting process of digestion, as given in the anatomy and physiol-

ogy of Chapter IV, we learn that these organs only prepare the nutriment, and then discharge it into the blood for distribution. It is now in order to describe those organs, with their functions, which receive this nutriment and use it in building the body.

THE HEART.

The heart, the busy little engine of life within us, is conical in form, and lies between the two lungs, obliquely across the chest. The point, or apex, comes out to the wall of the chest under the nipple of the left breast. The upper part, or base of the cone, passes upward and backward toward the right shoulder, and is securely fastened to the walls of the chest, while the lower part is left to vibrate freely.

Around the whole heart is a peculiar sac, consisting of two layers,



28. SECTION OF THE RIGHT AURICLE AND VENTRICLE.
The Valve leading into the Ventricle is open; that leading to the Artery is closed.

between which the walls are exceedingly smooth and lubricated by a secretion of their own. This sac is called the pericardium.

Internally, the heart has two parts, with a wall between them which completely cuts off direct connection, there being no passage from one side to the other except through the arteries, capillaries and veins described below. An accompanying illustration shows that there are four cavities, two auricles above, and two ventricles below. Between the auricle and ventricle on either side is a valve which permits the blood to pass downward, but not upward. A peculiarity of these



29. SECTION OF THE RIGHT AURICLE AND VENTRICLE.
The Valve leading into the Ventricle is closed; that leading to the Artery is open.

cavities is their power of forcibly contracting and so driving out their contents, as noticed further on.

ARTERIES.

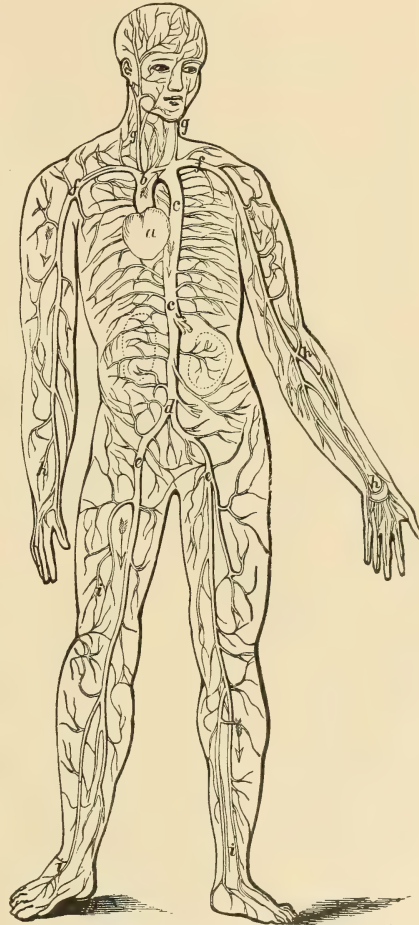
From the left ventricle a large tube, called the aorta, leads away from the heart, soon divides and afterward subdivides many times, until it passes to all parts of the body. This, with its branches, carries the blood to all organs and tissues. From the right ventricle another such tube carries the blood to the lungs. These tubes and their branches are called arteries, and carry the blood from the heart. They have very thick, firm and elastic walls, and are located deep beneath the skin.

CAPILLARIES.

The arteries terminate in the capillaries, very minute tubes that form a delicate network, in which the blood flows back and forth, and supplies nourishment to the tissues. An idea of the intricate nature of these fine capillaries may be gained from an illustration on the next page.

VEINS.

The veins, which collect the blood from the capillaries and carry it back to the heart, are of two classes, one leading from the tissues of the general body, the other from the lungs only. They have thick walls, as the arteries have, but not so firm and elastic. At their beginning, that is, remote from the heart, they are very small and numerous, but they unite at many places into larger tubes, until but two pour blood into the heart from the general circulation, and but four from the lungs. Unlike the arteries, they are near the surface of the body. They also have valves at different points which permit the blood to pass on toward the heart, but not in the opposite direction.



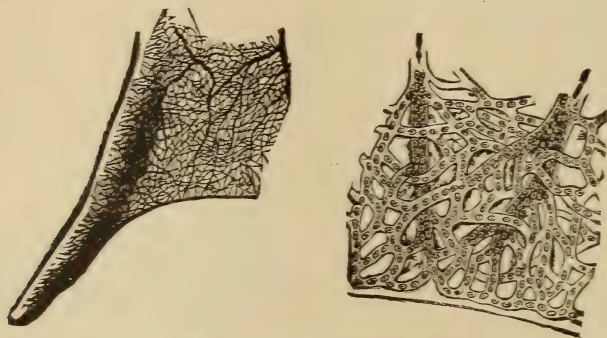
30.—ARTERIES OF THE BODY.

A.—Heart. B, C, D.—Aorta, or largest Artery.
F.—Subclavian Artery. G.—Carotid Artery.

CIRCULATION DESCRIBED.

The offices of these several organs will be better understood if the act of circulation is followed.

Suppose, for example, that the right auricle of the heart is full of blood. By involuntary muscular action this auricle contracts, and the blood is forced into the right ventricle through the valve. The ventricle now contracts, the valve just named closing, and the blood is sent through the pulmonary artery into the blood-vessels of the lungs. It now makes its way through a network of capillaries in the minute air-cells, described in detail in the anatomy and physiology of Chapter VI. Here it throws off its impurities, such as worn-out tissues and carbonic acid gas, and takes in life-giving oxygen. Through the rootlets of the pulmonary veins it is taken up from the air-cells and is poured into the left auricle as pure blood. Contraction



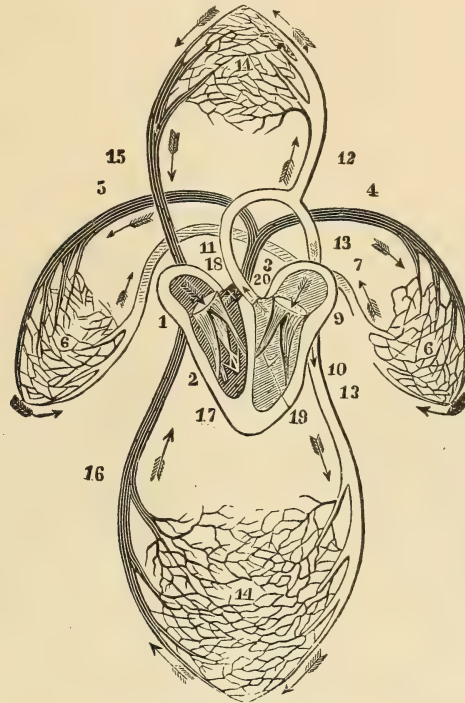
31. CAPILLARIES OF A FROG'S FOOT.

The first is slightly magnified; the second highly.

in the left auricle and ventricle takes place as in the right, but the blood is driven out through the aorta, the great highway from the heart to the general circulation; the different organs being supplied through their own arteries which branch off from this. In the capillaries, at the extremities of the arteries, the blood deposits the nutriment which it has taken for the repair of the tissues from the organs of digestion, each organ selecting its appropriate elements, and discharging the broken-down tissues. The blood is now taken up by the veins and carried back to the right auricle of the heart, where our observations on it began, ready for another circuit. The valves in the veins prevent the blood from rushing back into them when this auricle contracts.

The blood starts from the heart with a sudden impulse, and so continues through the arteries, while its passage through the capillaries and veins is

gentle and constant. If an artery be severed, the blood will come out in regular spurts with an almost complete stoppage between them; the flow from a severed vein, on the contrary, is continuous, and that from the capillaries trickles or drops. As death from bleeding will more speedily follow an injury to the arteries than to the veins, the former are better protected from harm by their remoteness from the surface.



32. THE CYCLE OF THE CIRCULATION.

- | | |
|----------------------------|--|
| 1. Right Auricle. | 12, 13. Branches of Aorta. |
| 2. Right Ventricle. | 14, 14.—Represent Capillaries of the Body. |
| 3, 4, 5. Pulmonary Artery. | 15. Vena Cava descending. |
| 6. Capillaries in Lungs. | 16. Vena Cava ascending. |
| 7, 8. Pulmonary Veins. | 17. Tricuspid Valve. |
| 9. Left Auricle. | 18. Semilunar Valves. |
| 10. Left Ventricle. | 19. Mitral Valve. |
| 11. Aorta. | 20. Semilunar Valves. |

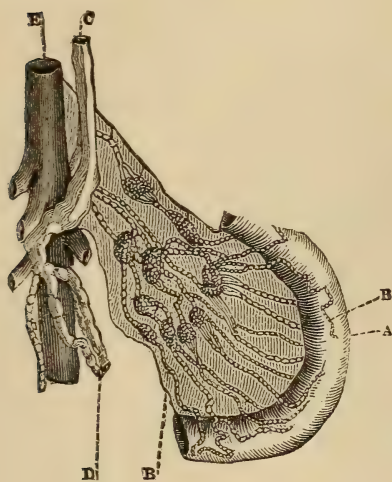
Again, the blood that escapes from an artery, being directly from the lungs through the heart, is pure and of a *bright-red color*; while that from a vein, being charged with the worn-out tissue and carbonic acid gas, is *dark and impure*.

THE PULSE.

The remarkable functions of the blood give its circulation a foremost

rank in the physical economy. It is the great architect of the body, ever sensible of its wants, and ever ready, in a state of health, to repair any waste. Hence the apt words, "The blood is the body in a fluid state."

Since the circulation extends to all parts of the body, it generally feels a disorder in any organ or tissue. The consequent disturbance will be noticed by the state of the pulse, since this is but the impulse of the artery where it comes near the surface. Any irregularity here is an evidence of a disorder in some part of the body. It is therefore important that one make himself familiar with the means of testing the pulse, distinguishing its characteristics as given in Chapter II.



33. LACTEALS.

B.—Lacteals. C.—Thoracic Duct.
D.—Absorbents. E.—Blood-Vessel.
A.—Small Intestine.

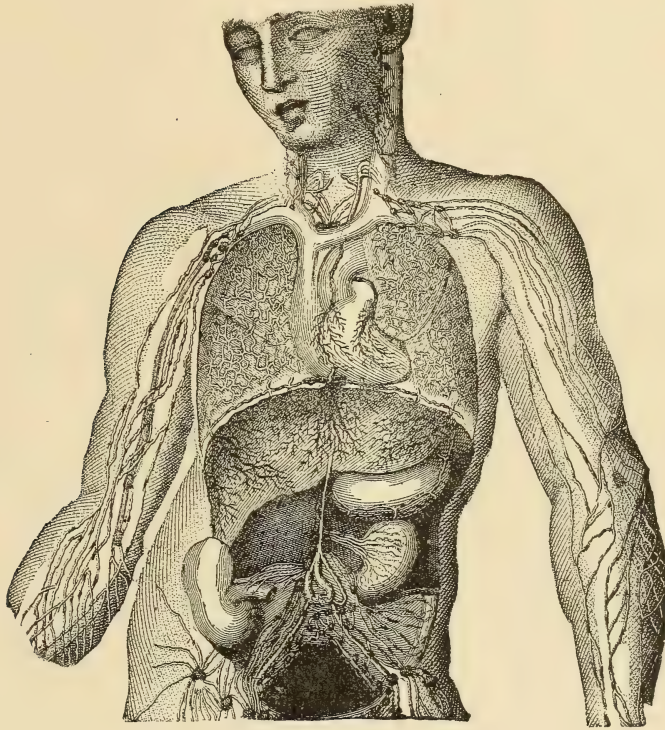
LYMPHATIC CIRCULATION.

In the anatomy and physiology of Chapter IV., mention was made of a class of vessels, called lacteals, that absorb and carry to the circulation some elements of the food which are not taken up by the blood-vessels of the stomach and intestines. A somewhat similar function is performed by a class of capillaries in nearly all parts of the body, which run by the side of and are intertwined with the blood-capillaries. They gather up a thin, colorless liquid, called lymph, which they convey to the circulation, the larger number converging in a vessel about as large as a goose-quill, which passes up the chest and empties into the large veins of the neck, thus reaching the circulation. These two

classes of vessels constitute the lymphatic circulation, and are mentioned in this connection because their office so nearly resembles in nature that of the blood-vessels, and because it is plausibly supposed that they are designed to gather up the refuse of the latter, or such parts as escape their absorbing powers. They do not however, contain blood, in a proper use of the term. The lymph undergoes some change in these vessels, not well understood, before it is discharged into the circulation.

The lymphatics effect the absorption of the skin mentioned in a later chapter, as well as that of the lungs, by either of which poisons from disease or other sources are readily taken into the system. They also, during the healing of a wound, distribute to the body the surplus material which

accumulates in a wound when it is first made; and a like balancing is effected when the body is deprived of food by sickness or other cause, the lymphatics taking up the fat and conveying it to the parts which more urgently need it. Because of this process it has been truthfully said that, in the rapid loss of the flesh by people who are sick or in a famine, and by



34. LYMPHATICS.

animals which spend the whole winter in their dens without food, the body lives on its own flesh.

In their course the lymphatics pass through numerous enlargements, from the size of a pin-head to that of an almond, which are known as lymphatic glands. In consequence of colds and other disorders, these glands become inflamed, swollen and clogged, thus entailing inconvenience and pain, if not very serious results.

THE CARE OF THE HEART.

The importance of the heart in the economy of the physical organism, of which a hint has been given in the pages immediately preceding, and the belief that the public should know more about its functions, with the means of preventing or modifying the dangers to which it is exposed, make a sufficient reason for devoting a considerable space to the care of this organ. The remarkable indefiniteness with which the term "nervousness" is used, has already been noted, and a like remark applies to "heart-disease." Nearly all people have at times some fancied affection of the heart, though they are generally troubled only with a disturbance which is a symptom of another disease. The dread of "heart-disease" in the public mind will be measurably relieved by a reading of what is here to be said, and many anxious patients will find the means of curing themselves.

What is offered upon this topic is chiefly condensed from the little work entitled "The Heart and How to Take Care of It," by the editor-in-chief. A grateful acknowledgment is made of the generous courtesy manifested by the publishers, the *A. L. Chatterton Publishing Company*, of New York, in permitting such use of the same. The reader is respectfully referred to that work for a fuller consideration of the subject.

LOCATION AND STRUCTURE.

Every one supposes that he, of course, knows just where the heart is located; but the great majority of readers will be surprised, upon carefully noting the location as given under the anatomy and physiology of this chapter, to find that it is not so low as they had supposed, nor lying so much on the left side. It is a laughable fact that actors and actresses, who are supposed to be technically exact in all the details of their parts, in referring to the heart oftener place the hand on the pit of the stomach than over the organ which they are in the act of apostrophizing.

It is presumed that the reader has already studied the structure of the heart and its functions, as given in the first pages of this chapter. He has there gained a sufficient knowledge of this organ as the central figure in the circulation, and it only remains to speak briefly of its muscular structure and nervous organism.

The heart consists of seven layers of muscular fibers; the central fibers of the muscular wall are circular, and go *around* the heart, while the fibers toward both outer and inner surfaces pass rather from base to apex, *twisting spirally* in their course. The outer and inner fibers continue into or connect with each other. Thus the heart may be described as a *coiled* spring of muscular fiber. Some of the great anatomists have unwound these

fibers, and they are found to be very complex in their connections, but all, except the central fibers, pass obliquely around the heart, and nearly represent the figure 8, only not as simple.

The *nervous* supply of the heart is even more wonderful than its muscular structure. It is so exquisitely elaborate that no attempt at an explanation will here be made. Suffice it to say that the nervous life of the heart itself is stored up in minute ganglia found in the substance of its muscular walls. It may thus be said to have a life of its own, and the fact that it will go on beating after it is taken out of the body illustrates this idea. In some of the lower animals, the reptiles, it will throb and beat for hours after it is separated from the body. Not only will the whole heart continue to beat when removed from the body, but even small and isolated portions will contract and relax with great regularity. Cut the heart lengthwise into two halves, and each half will continue beating. Cut it across through both auricles and ventricles, and both sections will beat as before. Take out ever so small a piece of it, and if it contains one of the little nervous knots called ganglia, it will beat as if it were the whole heart itself.

Besides the general nervous life which the heart receives through the *great sympathetic* from the brain and spinal cord, it is governed by three wonderful sets of nerves, which are named as follows: (1) The *accelerators*, which have power to increase and keep up the action of the heart; (2) the *retardators*, which have an influence to slow its action; and (3) the *regulators*, or inhibitory nerves, which keep the pulsations in order, and govern its rhythmical motions. If it were possible to expose these nerves in a living person, as has been done in animals, we could illustrate their influence: Thus, if we were to cut the *accelerators*, the heart would be under the opposing nerves, the *retardators*, and consequently its beats would become very slow and sluggish. On the contrary, should we sever the *retardators*, the heart, left to the influence of the *accelerators* and its own nervous life, would beat more and more rapidly. But should we sever the *regulators*, we would find the regular *rhythm* of the heart, and possibly its regular *force*, so modified that it would intermit in its action, or "wobble" in its motion, unless regulated by its own internal ganglia.

THE HEART'S REST.

It was until lately the professional, and is still the popular, belief that the heart never rests. On the contrary, it is now known that it not only rests but sleeps. It is true that in its incessant round of labor no long repose is compatible with the continuance of the existence of the organism. It not only rests and sleeps, but the amount of sleep is not small. It is estimated by Marey, the great French investigator, that *four-fifths* of its

life is devoted to rest, sleep and feeding. The heart, then, sleeps no less than 19 out of 24 hours; but it is not meant that this period is one of absolute inactivity, or immobility. Again, any increase in the rapidity of the pulse tends to exhaust the heart by diminishing not only its sleep, but equally its time for nutrition. The important bearings of this fact will be explained further on.

POWER OF THE HEART.

A wonderful and very interesting thing about the heart is its immense physical power. Every time it pumps blood into the arteries it exerts a force estimated at thirteen pounds. The usual force constantly exerted by the healthy human heart would sustain a column of blood $7\frac{1}{2}$ feet high, the weight of which would be about 4 lb. 6 oz. Imagine if you can an organ exerting this immense force hour after hour, day after day, year after year, and then try to estimate the aggregate power of the heart during the life of a man.

It must be considered also that the average physical power may be greatly increased by various causes. Unusual exertion, like lifting, running, climbing, may increase, temporarily, the amount of propelling force exerted by the heart; hence from over-exertion we may get apoplexy, bleeding from the lungs, and other hemorrhages, because of the unusual force with which the blood is propelled into the blood-vessels, causing them to burst. In violent, inflammatory fever, the blood-pressure may be so increased that the pulse throbs under the finger like the vibrations of an iron wire, and severe congestions often threaten or destroy life. Certain poisonous drugs possess the power of increasing enormously the propelling power of the heart, either directly or indirectly. In taking care of it, these facts ought to be remembered in order that we may avoid those causes which tend to excite it to unnatural action.

WHEN IS THE HEART HEALTHY?

The broad, general answer to this question is, *When you are not conscious that you have a heart!* It is an axiom in pathology that as soon as you are *conscious* of the existence of any internal organ, it is diseased. Now this is very nearly true, so true that it may be made a rule of guidance in many cases.

There are other signs by which you may know that you have a healthy heart. The *pulse* is a pretty good guide. If the pulse of an average healthy adult ranges between 70 and 80 beats per minute, and is full and regular, it indicates that the heart is at least not much disordered. The pulse-rate varies with the age. In a child at birth it numbers 120 or more.

The average pulse the first year of life is 104; from 2 to 5 years, 95; between the ages of 6 and 9 it is 80; after this age, 72 to 76, the same as the natural pulse of adults. The pulse of girls and women exceeds in number that of boys and men, by as many as five beats per minute. As a rule, any great variation in regularity, any intermittency, indicates some derangement of the heart, while variations from a healthy standard in rate and size indicate general or local derangement, not necessarily of the heart.

Sensations in the heart, such as throbbing, fluttering, soreness, pains of any kind, indicate that all is not right in that organ. But I must warn you that, because of the general lack of knowledge relative to the *location* of the heart, to which reference has been made, pains and other sensations usually referred to the heart are not in that organ. It will also be almost impossible for you to locate with any certainty abnormal pains and sensations in the heart, but you can more accurately judge from its *action*, for in palpitation, irregular action, and intermittency the sensation is very generally in this organ itself. It often requires the most careful investigation of the physician to decide whether certain pains are in the heart, or in the muscles which envelop the chest.

In a state of health, *i. e.*, with a healthy heart, no change of position, or ordinary exertion, causes any unnatural action of, or pains in this organ. Therefore, if lying on the side, especially the *left*, causes any unpleasant sensations or actions of the heart, it is an indication of some derangement of it. If stooping, lifting, going up stairs, walking fast or running, makes you acutely conscious that you have a heart, there is something wrong. I would not have you mistake this kind of action for the healthy, strong, rapid beating which comes after unusual exertions. The latter soon subsides, leaving you as unconscious of the heart's existence as you were before, while the former, by its constant recurrence, keeps you reminded of its presence, and that it is a source of annoyance. Nor should you get the idea fixed in your mind that because your heart acts unnaturally and is the seat of unpleasant sensations, that you have heart-disease. Only a small proportion of those who complain of their hearts have any disorder of that organ from disease originating in it. A vast majority of heart-derangements are caused by disorders of other organs. You ask why this can be. It is commonly called irritation from sympathy, which means that a-disordered liver or stomach may cause more or less deranged action in the heart, because the irritation of those organs is reflected back to the great chain of nerves called the sympathetic or reflex nervous system, and is carried by them to the heart. This kind of irritation is known to physicians as "reflex irritation," and may proceed from, or originate in, organs very remote from the heart. Nevertheless, you should heed these reflex irritations, for they warn you

that the health of other organs is impaired, and should be attended to, for even if the cardiac irritation is purely reflex, if it continues a long time it will result in a disorder of the heart itself, and remain fixed there.

HOW CAN WE TAKE CARE OF THE HEART?

To this broad question the general answer may be, *by avoiding all those influences which tend to derange its action, or cause disease to fix itself thereupon.* And right here I must warn you against going to the extreme of solicitude. *It is neither prudent nor safe to watch the heart with too much constancy.* I have known many cases of supposed heart-disorder to be caused by watching the heart's action and the pulse, or rather from watching *for* evidences of heart-disorder where none existed. Many persons become monomaniacs on this subject, and annoy their medical attendants very much by insisting that they have some affection of the heart, and doubt persistently the assertions of the physician after careful examinations that no actual disorder of that organ exists. Sometimes it is utterly useless for us to assure and reassure such patients. The best method I have ever adopted in such cases is to direct their attention to other organs as the source of complaint.

INFLUENCE OF THE WILL AND IMAGINATION.

We should keep well in mind the fact that, although the heart is made of involuntary muscular fibers, which are supposed to act independently of the will, it receives its supply of nerve-force from nerves which originate in the brain. We know, too, that mental emotions directly affect the heart, which they must do through these nerves. Why should not the brain, acting to enforce *will*, send its mandates to the heart? Some remarkable cases are on record to show that such may be the case. Physicians know that the action of the heart may be quickened by the mere centering of the consciousness upon it, without any emotion or anxiety. We all observe that when we begin to feel the pulse, it is always hurried if the patient fixes his consciousness on the act. In making examinations of healthy men for life insurance, I have often observed that the healthiest hearts will beat hurriedly and unnaturally, because the candidate was conscious that I was listening for disease. It is related of a gentleman, resident of Baltimore, a Col. Townsend, that, by an effort of the will, he could at any time cause an apparent cessation of all the vital functions, so that the *heart's action could not be perceived*, nor any respiratory movements be observed. It is possible that we possess some will-power on the heart, and that this influence might be increased by cultivation. I can imagine cases where it could be exercised with benefit.

We can therefore avoid derangement of the heart's action by regulating our mental and physical life. There is a hygiene of the heart, as well as a hygiene of the brain. If we know what influences to avoid, we can prevent many troublesome and serious cardiac disorders.

INFLUENCE OF THE EMOTIONS.

As any one may easily see, the influence of the emotions upon the heart is direct and indisputable. If they are not intense, and the heart is healthy, no bad results ensue; but if they are sudden, powerful and overwhelming, the heart may be injured beyond recovery. Such emotions and passions as fear, fright, terror, rage, anger, joy, care and anxiety, may all act in either of two ways:—

(1) By stimulating or exciting the heart's action through the brain, acting on the *accelerator* cardiac nerves. Who that has been under the influence of these emotions has not felt his heart throb and palpitate, and send unwonted currents of blood to the face until the temples beat and the cheeks flushed? This is more especially the effect of the pleasanter emotions, such as joy, expectation and love.

(2) All these passions, when abnormal or intense, may have a profounder effect. There may be no stage of excitement or one that is very transient, and in its place comes a dangerous depression of the heart's life. In such cases the heart seems to stop, or hesitate, or give great heaving surges, and the face becomes pale, the extremities cold, the pulse grows weak and finally disappears, and fainting supervenes. Now, fainting is a suspension of the heart's action. It is the step nearest death; only a mere line divides the two conditions.

The heart may be paralyzed in two ways—by over-distension and nerve-lesions. In the former, the blood rushes to the heart in such overwhelming quantities that its cavities are distended so greatly that they cannot contract; then comes paralysis or rupture. In the latter, the morbid influence sent from the brain to the heart has the same effect as if a powerful galvanic current were sent through them; they become paralyzed, and the heart does not receive its usual motor power. In this way, fear has killed many, and I have reason to believe that the influence of fear on little children has often resulted in chronic heart-derangements. Mothers, and fathers too, should be careful how they punish their children by acting on their fears. They may entail upon them life-long misery, without in the least improving their moral condition. Great fear and terror in adults may be attended with the most serious results. The most observable symptoms are general trembling, coldness of the extremities, cold, pale face, with sweat all over the body. If no fatal results follow, a repeated seizure of great fear, or

even a single one, frequently results in permanent weakness of the inhibitory or *restraining* nerves of the heart, and the victim becomes the subject of an *irritable heart*. Every physician meets with these cases.

The effects of fear cannot always be guarded against. The tendency to be frightened or affected by terror is often inherited, often constitutional, and often acquired during childhood, the result of inhuman treatment. Such subjects can no more prevent attacks of terror, even from apparently inadequate causes, than some persons with peculiar delicacy of constitution can avoid "taking cold." But it is worth while for all to cultivate coolness of temperament, and a certain degree of stoicism. We have more control over ourselves in this respect than we are aware.

Numerous interesting cases are on record, which show the profound effect of fear on the heart's action. There is a well-authenticated case in which a man was pricked by a pin while blindfolded; warm water was poured down his arm, and trickled off his fingers. He died from the effects of fear and *expected* death, for he had been told he was to be bled to death. During epidemics of cholera, fear is a prominent factor in the fatality and frequency of the disease. Some minds are so organized that the near presence of a dangerous disease so depresses the vitality of the organism that neither the mind nor the body can resist its onset. If seized with the disease, they are pretty sure to die. Many die from fear who have not any disease.

We know of examples in which fear prevents fainting so long as it operates, but immediately it is withdrawn, the system yields to the reaction, and fainting occurs. Delicate women have stood for hours assisting in some severe surgical operation, or supporting a loved one in the agonies of suffering, but who, when the scene was all over, have fainted dead away and been restored with difficulty. In these instances, the effort of the will keeps up the tone of the nerves which go from the brain to the heart, until the time of necessity is over. *Then* the will ceases to act, and the nerves to convey force to the heart, and it stops beating.

The effect of anger and rage upon the action of the heart is almost the opposite of that of fear. Instead of the coldness and fainting, we find rapid and tumultuous beating of the heart, the face becomes turgid and swollen, the temporal arteries throb, and the whole body, even to the extremities, seems to partake of the same condition. In some cases the eyes become "blood-shot," and blood flows from the nose or lungs. In others, apoplexy has been known to occur, and carry off the enraged man. All these symptoms denote the excited and innerved, or *tense* condition of the heart's muscular tissue.

But people often "turn pale with rage." What does this imply? Simply that the irritation of the heart is so great that it *cannot beat hard*.

It is closed tight upon itself, almost to the degree of spasm. It does not appear to beat at all, yet there is *no fainting*. It is the opposite of paralysis with distension, and the brain and muscles are not deprived of blood. In proof of this assertion, that rage does not paralyze the heart, is the fact that the emotion has been known to cause that fearfully painful affection known as *angina pectoris*, which is now believed to be a *cramp of the heart*.

There is a condition which might be termed one of *chronic* anger, as when the mind dwells wrathfully upon some real or fancied wrong until it becomes the one dominant idea. This is allied to *anxiety*, and has a similar effect upon the heart. It causes a heavy oppression in the region of the heart, with irregular or intermittent pulse, and often leads to permanent disorders. It is imprudent and even dangerous for us to allow such a passion to get possession of the mind. We can and ought to prevent it by a firm resolution, and the exercise of a Christian and forgiving spirit. It is not only good for our souls—our spiritual hearts—to *forgive*, but it is better for the well-doing of the physical heart. When we forgive a wrong, or trust implicitly in a Divine Providence to *right* everything, then the mental and physical strain relaxes, and we gain in mental and physical integrity.

The emotion of joy, especially when sudden and unexpected, is very apt to influence the action of the heart in a remarkable manner. Its beats are at first greatly accelerated, and its action is excessive. It throws the blood in torrents all over the body, particularly the head. The face becomes flushed and burns with intense heat. In strong, robust persons, the arterial storm may subside, and leave no derangement behind; but in a person with an already weakened heart, the consequences may be troublesome. The reaction, or secondary effect, may be *fainting*, which may occur so soon after the onset of the emotion as to appear to be a primary effect. But a close observer would doubtless discern a brief period of excitement preceding.

Lord Eglinton informed John Hunter "that when two soldiers were condemned to be shot, and one of them to receive a pardon, the event being decided by the throwing of dice, the one who proved successful—thus securing a reprieve—usually fainted, while the other remained calm." The American poetess, Lucretia Davidson, who died at the age of 17, often fainted when listening to some of her favorite melodies from Moore, yet, notwithstanding this, she would beg to have them repeated. A doorkeeper of Congress, an aged man, died suddenly on hearing the news of the capture of Lord Cornwallis' army. These are instances of fainting from joy. In the first cases, the heart, though weak, was able to bear the strain. In the last instance, that organ, weakened by age, was fatally injured by the sudden excitement.

We see from these cases that there is danger even from one of the

most delightful of emotions, and we should guard our minds from feeling strongly the influence of any. Stoicism is a mental state that can be cultivated in most of us, especially when the nervous system has not lost its tone. The difficulty is that very susceptible persons are either born with an irritable nervous organization, or it becomes an acquired condition.

Grief, care, and anxiety, alone or combined, are very potent influences in injuring the integrity of the heart. Dr. Richardson says, "I have never met with a case of intermittent pulse in which the disorder was not sequential to some anxiety, shock, fear, sorrow, or their similars." Of course he refers to disorders of the heart not organic, or rather *not* due to rheumatism; for it cannot be disputed that this long continuance of great anxiety is capable of bringing on actual structural changes in the heart. Bonnet, Morgagné, Tissot and others assert that dilatation of the heart has been caused by chagrin and anger.

From statistics we learn that in the last twenty years deaths from heart disease have increased about twenty-five per cent., and that the percentage of the increase is entirely confined to men; and to those between the ages of twenty-one and forty-five, which is the time during which they are subject to the most trying emotional influences. I imagine that the reason why the percentage has not increased with women, is because they are exempt from many of the intense emotions to which men are subjected. Women seldom participate in exciting speculations, and therefore escape the shock of financial crises which injure so many. They do not engage in political controversy with its extremes of hope and anxiety, and the intense mental strain with which it is always attended.

Homesickness is a condition in which grief and anxiety are commingled. It is a well known fact that Swiss and other soldiers taken from their native mountains often die of homesickness, and with symptoms which closely resemble fatal weakness of the heart. It has been observed by African travelers, among whom are Livingston and Baker, that when the natives belonging to some of the interior tribes were taken from their homes by force or bribes, their sufferings from homesickness were intense and sometimes fatal. These sufferings were not only mental, but physical, for when asked to point out the seat of their evident suffering, they indicated correctly the region of the heart. These same authorities further assert that those who died showed all the evidences of death from cardiac disease.

The sudden shock caused by grief, sorrow, and kindred emotions, acts in a manner nearly opposite to joy. When we hear of the unexpected death of a dear friend, the loss of all our worldly goods, or of some other great calamity, the heart seems to stop beating. In fact, it hesitates, often

does stop, and syncope occurs. The blood is not thrown to the brain, and consciousness is lost. This condition, often caused by fright, terror, the sight of blood, or even expected suffering, often simulates death so closely as to deceive the most expert physician. It may actually cause death by rupture of the heart, or spasmodic closure of its cavities for such a length of time as to preclude recovery. But if restoration occurs, the heart has received such a strain that it may take that organ weeks and months to regain its original tone; or it may not recover at all, but lead finally to one of the many forms of organic disease.

There is another form of disease resulting from grief which is too important to be omitted from mention here. It is a condition of general debility, termed by medical men *anæmia*, or bloodlessness, or a condition of the blood in which the red portion is deficient. The process by which a weakened heart assumes this condition is often too complex to be explained to non-professional minds. It may briefly be described, however, as a condition of the heart which prevents its normal function of throwing the blood to all the tissues and organs of the body; in consequence of which the skin becomes cool and pale, the extremities cold and emaciated. As a result of this imperfect circulation, the muscles become pale and flabby, the nerves insufficiently nourished, and every organ has its vitality impaired. As a direct consequence of this, we find the patient suffering from muscular debility, nervous debility, neuralgia, dyspepsia, derangement of the liver, and all the blood-making organs. *Impoverished* blood is a certain and sure result of an insufficient supply of blood, and all these abnormal changes are due to a condition of the heart which may have originally been caused by the shock of unrequited affection, disappointed love, or the death of a beloved one.

After the great fire in Chicago, it was observed by medical men that a larger proportion than usual of the diseases they were called upon to treat was due directly and indirectly to derangement of the heart. Probably no event in the history of this country ever caused more intense and profound shocks to those interested. The first effect in nearly all cases was a fierce and terrible excitement of the heart. Those who remembered their sensations during that terrible day and night said that the beating of their hearts was so quick and hard that it seemed striving to break its way out of the chest. This condition was greatly aggravated by the severe physical exertion to which nearly all were subjected. The secondary effects, however, were those most manifest after the dreadful days were over. The excited heart-storm became lulled, but it was the deceitful calm of debility. The care, anxiety, sleeplessness, and enforced exertion of mind and body increased this cardiac debility. The heart's action became quick and weak,

or irregular or intermittent. All the organs, especially the brain, suffered from lack of blood. The brains of many became very irritable, and insanity ensued. In others, the brain became anæmic, and a profound melancholy took possession of the victim, who afterward ended his life by suicide. Those who recovered did so by change of climate, or a constitutional elasticity which enabled them to resist the effects of debility.

It may be asked, Do none of the emotions act in a beneficial manner on the heart and the general system? I reply, that the action of the emotions is like the action of food and medicines. In proper and moderate doses, they do act beneficially. But there is a difference in their essential character. The depressing ones never cause any beneficial effects upon the physical body, although they may upon the spiritual life. The exhilarating emotions, however, act as stimulants and tonics, and actually increase the vitality of the heart and body, unless they are experienced in excess. Joy, moderate and continuous, increases the vital manifestations of physical and mental life. Love actually increases the health of its happy possessor, unless it is marred by such depressing emotions as jealousy and envy. Hope is such an exhilarating tonic that it has carried many through great and depressing trials, and raised many from the lowest conditions of prostration, both mental and corporeal.

INFLUENCE OF DIET.

The great nerves which go to the heart from the brain and spinal cord also send branches to the stomach and other organs concerned in the process of digestion. The stomach and heart are in closer sympathy than is suspected by the great masses of people. Any irritation of the coats of the stomach from improper articles of diet, or any substance taken into that organ, can, by irritating its sensitive nervous supply, send an influence to the cardiac nerves, which may, even in a healthy heart, cause it to beat more forcibly and rapidly than is normal. This will occur if the stomach is perfectly healthy, but if the digestive organs are diseased, then the morbid influence sent to the heart has a greater effect. What, then, must occur if both stomach and heart are in a weak and irritable condition? Evidently such an amount of irritation as will cause the heart to act so unnaturally as to simulate serious disease of that organ.

It is doubtless a fact, too, that repeated errors in diet, such as overloading the stomach with indigestible food, and the use of stimulants, may, by constant reflex irritation, weaken in time the healthiest heart. Keeping this in mind, common prudence and judgment would dictate to us that if we observe any undue action of the heart, or flushings of the face and fullness of the head, even if we are not conscious that the heart itself is dis-

ordered, we should seek to ascertain the offending articles of diet, and banish them from the table.

I will try to point out a few of the articles which are most likely to act in the manner above indicated.

FLESH-FOOD.—In some persons, mostly those of full and plethoric habit, the habitual use of meat, especially if it forms the principal portion of each meal, causes increased labor to be performed by the heart. This may arise from the highly-stimulating character of the food, as also from the unnatural amount of blood manufactured from such a diet. This increased labor may have effects of a diverse character in different forms. If the individual has general muscular debility, it would probably cause enlargement of the cavities of the heart, with thinning of its muscular walls, and this condition implies great weakness and irritability of that organ. The results would be palpitation of the heart after each meal, and after any unusual exercise, going up stairs, running, and the like.

Another result, of quite an opposite character, would occur in persons of large, strong muscles, with an excess of blood. The already strong muscular structure of the heart, being constantly fed by a great blood-supply, and working hard to distribute such supply, will grow in size and strength, as a blacksmith's arm grows, until a condition of the heart obtains which is known as *enlargement with thickening* of the walls of the heart.

Men who are engaged in athletic sports as a business or a pleasure are obliged, from the nature of their avocation, to adopt a peculiar diet. Boating, base-ball playing, gymnastics, pedestrianism, and pugilism, all require their votaries to "go into training," which means that they must go through certain processes of rubbing, bathing, and exercise, and also feed almost exclusively on animal food. All this is done to increase the size and strength of each muscle in the body, especially those which are to be used in the special business or pleasure in which the person engages. But this increase in muscular power is often gained only to bring with it so much abnormal power in the heart as to lead to serious if not fatal consequences.

Dr. Richardson, in his "Diseases of Modern Life," has correctly pointed out the dangers to the heart of this excessive physical "training," or rather *over-straining* of the muscular system. He says: "The exact mode of death from physical overwork is by the destruction of those parts of the body on which the involuntary acts of life depend, viz., the muscles and nervous structure engaged in the digestion of food, the circulation of blood, and the respiration. * * * The heart by nature is endowed, as an active organ, with extreme powers of resistance and endurance. It also possesses in a limited degree the property of renovating itself, and

even of becoming larger and more powerful as it is subjected to undue labor. Hence, in purely natural states of existence, as in the primitive life, when good food and good air supply perfect blood for building up the tissues, the heart will continue to an advanced age to support an action considerably beyond the merely required range of its functions. In our own country, in rural districts, we frequently meet with men who are accustomed to run, leap, carry heavy burdens, or walk unusual distances per day, until an advanced age, and without great suffering. On listening to the hearts of these men, we find, however, the beat unnaturally strong; and as they approach their decline, they invariably complain of breathlessness, and of symptoms indicative of an oppressed circulation."

The same writer explains that this increase in the power and size of the heart leads to serious congestions of various organs—as the head, causing apoplexy; the lungs, causing bleeding; and the liver, causing bilious conditions; and mentions especially the fact that the victims of these accidents are those who are addicted to the so-called athletic sports, such as foot-ball, boxing, rowing, leaping, and running. He speaks of the well-known disease of the large blood-vessels of the body called *aneurism*, "meaning a rupture of one of the coats of the artery, allowing that portion to *pouch* and form an enlargement at the point injured. This disease is caused by an excessive action of the heart, throwing such an amount of blood into the arteries that it cannot be carried through the system, but is thrown back by *concussion* upon the heart, and thus mechanically injures the wall of the artery."

There is a peculiar form of heart-disease which is brought on by a diet of *fats*, or those substances, like sugar and starch, which are, in some persons, rapidly converted into fat. I allude to "fatty hearts." There are two forms of this disease; we seldom find them separately, however, for the causes of one are the causes of the other. In one variety, the heart is loaded down with an accumulation of fat deposited upon it. This interferes with its action, embarrasses its motion, and leads to great weakness and irregularity. The other variety exists when the muscular structure becomes permeated with fat, or, as some would define it, the muscular fibers become transformed into fat. These diseased conditions rarely occur except in persons who are disposed to grow fat, or become *adipose*, from constitutional or hereditary tendency. The whole body shares the habit of fatty deposits. Such persons should carefully watch this tendency, and if they discern any symptoms of weakness of the heart, or oppressed breathing, they should strictly eliminate from their diet all fats, sugar, starch, and alcoholic or malt liquors, and live on lean meats, well-baked bread, and similar *non-fat-producing* articles.

COFFEE.—Among the articles in common use in nearly every country is the berry of the coffee tree. This in its crude state may be considered a poison to the nervous system. For this reason, it is always subjected to a process known as "browning," or roasting, which drives off a portion of a semi-volatile principle known to chemists as *caffeine*, a specific poison to the heart. Experiments on animals demonstrate that it at first causes increased action of the heart with a rise in the arterial pressure, but this is soon followed by a corresponding decrease of pressure, and the heart then becomes paralyzed. In the same experiments it was observed that the spinal cord was irritated to such an extent that tetanus, or "lock-jaw," occurred. The excessive use of coffee as a beverage sooner or later breaks down the tone of the nervous system; next, it interferes with digestion to such an extent as to almost arrest that process. I have treated very many cases of chronic and obstinate dyspepsia that would yield to no remedy until the patient gave up the use of coffee. To such an extent are the digestive organs weakened by it, that the food is hurried through the stomach a short time after it is swallowed, and before it has had time to be absorbed as a nutritive agent. Even if it is retained, it seems to pass along the digestive tract without passing into the absorbent system. The strongest organism cannot long withstand such a deprivation of nutriment, and the *heart* soon becomes as weak as the stomach, and this increases the dyspeptic condition to an alarming degree.

There is but one class of persons with whom coffee agrees, namely: Those whose avocations necessitate great exertion and labor in the open air. Soldiers, sailors, hunters, miners, etc., can drink an amount of coffee in a day that would soon destroy the integrity of the nervous system and the digestive organs in persons of a sedentary habit. The reason is that the active exercise causes profuse perspiration and great destruction of tissue-elements. All this waste is accompanied with elimination of the caffeine from the blood. But if coffee is used by persons whose life is spent in repose or indoors, the caffeine is retained in the blood, and the nervous system is rapidly poisoned by its injurious influence.

Ample opportunity to observe the effects of coffee on the two classes—the active and the sedentary—was afforded during the late civil war. It was observed that men who for years had been victims of dyspepsia—who could not drink a cup of coffee without much suffering—whose hearts were feeble and whose whole constitutions were so deranged that they barely passed an examination, after a few weeks in the army, exposed to the active exercise incident to a soldier's life, could drink the strongest coffee three times a day, without feeling any of its former injurious effects. These men, unless subjected to imprisonment in close and unventilated quarters, gener-

ally came back to civil life with robust health and powerful digestion. But it was observed that, on renewing their sedentary occupations, coffee became to them as much of a poison as before, its use bringing on the same train of digestive derangements, palpitation of the heart, headache, etc. The deductions to be made from these facts are, that persons of sedentary habits, with feeble circulation, and nervous irritability, should abstain from the use of coffee. The most troublesome cases of heart-disorder I ever treated were induced by the excessive use of that delicious French beverage, *café au lait*.

TEA.—Tea exercises a more baneful influence on the heart than coffee. The alkaloid *theine* is very analagous to *caffeine*, but has a greater tendency to injure the nerves which regulate the heart's action. One of the first symptoms of excessive tea-drinking is a sensation of "sinking," faintness, or weakness at the pit of the stomach. This symptom is generally a sure indication of cardiac debility. If the use of tea is persisted in, other symptoms supervene, such as *trembling* of the heart, corresponding to the trembling of the hands which so annoys the tea-drinkers. Afterward come palpitation of the heart, sighing respiration, feebleness of circulation, cold extremities, great sensitiveness to atmospheric changes from cold to hot, or *vice versa*. The neuralgia which comes from tea-drinking is the result of cardiac weakness, and usually subsides after the use of tea, particularly green tea, is abandoned, or some cardiac tonic is taken to antidote its effects. I allude to green tea, because that corresponds to unroasted coffee. Black tea is subjected to the action of artificial heat during the process of drying; it is in fact *roasted*, and a large portion of the *theine* is driven out of the leaf. Green tea is cured by the natural heat of the atmosphere, or a low degree of artificial heat, and thus retains a larger quantity of its *theine*.

Tea differs from coffee in never causing *primarily* such an intense dyspeptic condition. The weakness of the stomach is a secondary symptom due to its enervating influence upon the heart. A weak heart causes a weak stomach. A weak heart implies a deficient supply of blood to all the organs. A deficient blood-supply diminishes the functional activity of the organs. There is one exception, however, to this, and one which I confess I cannot satisfactorily explain. I allude to the action of tea upon the *brain*. It seems to increase not only the functional activity of the brain, but its endurance of mental labor. I have always thought that tea, like the Indian "hasheesh," had some specific, stimulating influence on the purely psychical portion of our system. Certain it is that, amid the general debility of the nervous and physical organism caused by tea, the power and activity of the intellectual faculties remain not only unimpaired, but actually increased. To this I refer the sleeplessness caused by tea, and not to the deprivation of the brain

of its usual amount of blood, as is the case with other drugs which weaken the heart.

But the literary man and the intellectual laborer should not live on the influence of tea alone. Unless the tea-drinker takes a sufficiency of nitrogenous food to manufacture blood and nerve-tissues, the constant intellectual strain will tell upon the brain; and the general health will soon be so wretched as to diminish the *physical* capacity for mental labor. A man or woman can drink large and repeated quantities of an infusion of black tea without any general injurious effect, if they will at the same time live on a strong nutritious diet.

I would advise that *green* tea never be used. It is rarely used in China, Russia or England, countries which consume more good tea than all the rest of the world. Black tea is not much better if cooked as green tea is, namely, quickly *infused*. It should be made by *decoction* (steeped or boiled). The longer it is steeped the less *theine* remains, and the greater is the amount of nutritious matter extracted. Tea leaves contain nearly as much nutritive material as peas or beans, and more than any other leaf. It is the custom in some countries—and a very good one—to eat the leaves after the decoction is drunk. It would be quite as sensible to throw away beans or rice, and only use the liquid portion of the soup, as to throw away the leaves and only use the infusion.

TOBACCO AND ALCOHOL.

TOBACCO.—The use of tobacco in some form is well nigh universal. It is more generally used than tea and coffee, for there are countries where the latter are scarcely known. It were useless to inveigh in general terms against the use of this drug. If it were always as deleterious as some assert, it would not be as extensively used. I do not deny that it is a poison, but so are many other agents which enter into our daily life as food or beverage. In large quantities, *i. e.*, large enough to cause death, it has the following effects:—The *brain* is found empty and pale; the *stomach* is reddened in round spots, so raised and pile-like that they resemble patches of dark Utrecht velvet; the *blood* is preternaturally fluid; the *lungs* are pale, like those of a calf when we see them suspended in the shambles; while the *heart*, overburdened with blood, and having little power left for its forcing action, is scarcely contracting, but is feebly trembling, as if, like a conscious thing, it knew equally its own responsibility and its own weakness. It is not beating, it is fluttering; its mechanism is perfect, but each fiber of it to its minutest part is impregnated with a substance which holds it in bondage, and will not let it go. I have seen cases of accidental poisoning from tobacco, in cases of children, when the ear placed over the heart could detect

only this faint, tremulous motion, and so feeble was its action that no wave reached the wrist.

While it would be difficult to prove that tobacco ever caused structural disease of the heart, there is no doubt in the mind of any medical man that it is capable, even in moderate use, of causing troublesome functional disorders. By functional disorder I mean what is generally known to the public as nervous derangements. It is a condition of the nerves and muscles of the heart that causes it to act feebly, irregularly, and too excitedly. It is an increase of *action* without an increase of *force*. I have had many opportunities to observe the effects of tobacco on the heart, especially in inveterate smokers, and the symptoms are not only unpleasant, but at times alarming. These symptoms often appear suddenly, and after the smoker has used tobacco for years with apparent impunity; and they may last for hours at a time. They are characterized by palpitation, a sensation as though the heart were rising into the throat, a feeling of breathlessness, and an insupportable pain in the region of the heart. Pain of a spasmodic kind extends also to the muscles of the chest, and occasionally to those of the arm, especially of the left arm. I have had patients who were supposed to be suffering from that terrible form of neuralgia of the heart, called *angina pectoris*, and for whom no medicine gave relief till they abandoned the use of tobacco.

If I should be asked the question, "Is tobacco ever beneficial to the heart?" I should reply in the affirmative. My own observation has convinced me that moderate smoking is beneficial in two conditions of the heart, namely (1), an over-action of the heart, as after severe labor or great mental excitement, when it beats with undue force and unnatural rapidity; (2), in cases of enlargement with thickening, or when the heart-muscle is too strong and powerful. In these cases, tobacco, if used carefully, and at the proper time, acts as a calming and restraining remedy, soothing the excited heart, and acting in all respects as a curative medicine. But persons having an already weakened heart should not use tobacco. Nor should any one with a heart organically diseased, except the enlargement above mentioned. It is especially to be deprecated in young persons—those under eighteen or twenty years of age—for not until then has the heart, or any other muscle, attained its mature strength, and consequently is before that age more easily weakened. Tobacco is much less injurious when smoked in the open air than in a close room, for the reason that in the former case less is absorbed into the blood through the respiratory organs.

ALCOHOL.—When speaking of articles of food, I advised the avoidance of fats and sugar by persons disposed to corpulency or obesity. The same advice will apply to all fluids containing a large percentage of alco-

hol, and to malt liquors. Sugar, starch and alcohol change to fatty elements when assimilated by the body. This is the rule in certain constitutions which are disposed to make adipose or fatty tissue. They not only cause an excessive deposit of such tissue all over the body, but especially upon and in the heart. In this organ it accumulates in excess in the same location as the normal deposit, which is upon the auricles. When an abnormal deposit occurs, it interferes mechanically with free movements, weakening the strong heart and almost paralyzing the already weakened one.

But alcohol causes a more serious disease of the heart, namely, *fatty degeneration*, "an interposition within the fiber of a fatty substance by which the true muscular elements are partially replaced, or a degeneration produced by an excess of fluid between the muscular elements." "In these states, the power of the heart to propel the blood is enfeebled, and, although for a much longer time than might be expected the heart responds to the agent that is destroying it, and continues to beat more freely when the extreme vessels are paralyzed and the arterial vessel is weakened, a time at last comes when the absence of the recoil is the forerunner of death. For it is by the recoil of the great arteries that the heart itself is fed with the sustaining blood. When, therefore, this back stroke of the circulation is greatly weakened, and the flow of arterial blood through the heart is reduced, then the nutrition of the pulsating organ is impeded, and the over-stimulant, failing to stimulate, becomes even a depressant." (Richardson, Dis. of Modern Life.) In this condition of the heart a slight cause may lead to fatal results. A mental shock, a mechanical strain, an exposure to cold, or unusual abstinence from food, is often sufficient to break down completely in a brief hour the enfeebled organ of circulation.

Of course I have alluded above to that excessive use of alcoholic beverages which brings about a condition which we term *alcoholism*, and which will change the most robust organism into one utterly shattered and debilitated. But the moderate, and what is termed the medicinal use of alcohol, in the form of wine, or beer, or spirits of any kind, may, under certain conditions, cause a similar state of disease. We will suppose a case of a person debilitated by any disease. He is emaciated; has a weakened heart, because it is emaciated; is advised to take whiskey, alone, or with cod-liver oil. At first he is benefited, unless the dose is too large—but he finds it difficult to discontinue its use after he has regained his normal strength. He can leave off the oil, but he misses the stimulating effects of the alcohol, and, unaware of the danger, he continues its use, the dose generally increasing day after day. Soon the deposition of the fat or water in the body becomes abnormal, he grows adipose or dropsical, and in time gets a weakness of the heart which cannot be cured.

Physicians are not cautious enough in prescribing alcoholic stimulants, or tonics associated with alcohol. They do not warn their patients of the danger of too long use of stimulants, or tell them when they should leave them off. My practice brings me into frequent contact with men in whom *alcoholism* had its origin in the medicinal use of spirits. I have met with many estimable persons, ladies and gentlemen in the highest ranks of society, who could date the origin of a fatty heart to the too prolonged and excessive use of whiskey and cod-liver oil.

The excessive use of beer and porter tends to cause fatty degeneration, especially in those who have not been accustomed to use them all their lives. Many Americans are advised to drink beer for the removal of chronic or acute debility, or for the purpose of increasing their *embonpoint*. Not being accustomed to the use of such beverages, as are the English and Germans, the alcohol takes deeper hold of the system, and its effects are manifested in a deleterious manner, especially on the muscular structure of the heart.

IMPURE AIR.

The influence of impure air upon the heart is injurious in the extreme. The heart needs for its healthy nutrition as pure blood as does the brain or lungs. The healthiest hearts are found in persons residing in mountainous countries where the air is pure. The weakest hearts, as a rule, are found among those who live in dark, close rooms, on the crowded streets of great cities.

Why do people faint in crowded rooms, in churches or theaters? We say the air is "close," but that does not explain it. All faintings are due to deficiency of blood in the brain. This condition may arise from several causes: (1) Contraction of the cerebral blood-vessels from vaso-motor spasm, as in hysterical fainting, or fainting from some emotional influence. (2) Weakness of the heart, which may be sudden and transitory, from mental impressions or excessive heat of the atmosphere, or organic fullness from disease. (3) But the fainting which most commonly occurs in crowded assemblies is due to the noxious influence of carbonic oxide, and may affect healthy as well as unhealthy hearts. Some experiments have shown that if a stream of carbonic acid gas is passed, with the blood current, through a healthy heart, it becomes paralyzed. Now, the same thing occurs when we sit in crowded, unventilated rooms. The air of such is generally saturated with this pernicious gas. We take it into the lungs, it is absorbed, taken up by the blood, and carried directly to the heart. Its effect on the heart is often felt without the occurrence of other symptoms, and the victim faints suddenly. In other cases, he feels a sense of stupor

that steals away his consciousness, which is due to the presence of the poison in the brain. In this manner act the fumes of charcoal, under whose dread influence so many unfortunates pass into the unknown world. In poisoning by carbonic oxide, the heart beats feebler and feebler, it sends a constantly lessening amount of blood to the brain, until there comes a time when the cerebral vessels are not filled; then fainting results. During such syncope, the heart's action can scarcely be perceived. It has almost failed to distribute the vital fluid to the body. The extremities are cold and pale, the face pallid and pinched, and the pulse feeble or imperceptible.

The reader should studiously observe the rules for "Ventilation" as given under Hygiene and Home-Nursing, and also acquaint himself with the directions for reviving the victim of poisoning from carbonic acid which are laid down under "Suffocation" in the chapter on Emergencies and Domestic Surgery.

EXERCISE.

Under the head of exercise, I shall include all kinds of physical exertion. I shall first treat of those which, if carried to excess, may injure the *healthy* heart, and, secondly, physical exertions which should be avoided by those whose hearts are not normally strong.

It may be stated, as a general axiom, that no other organ of the body is so much affected by exercise as the heart. Its normally healthy action is quickened by walking fast, riding on horseback, running, ascending heights, climbing, rowing and leaping. Even a change of posture, such as rising from a sitting or lying posture, will change temporarily the number of the beats.

There is hardly a more difficult problem than that of determining the natural bounds of physical exercise. The labor that is almost necessary to the health and well-being of a tiller of the soil would be very injurious to the denizen of the city. The severe exercise of the mountaineer would injure the healthy resident of the plains, and the physical exertion of the boatman and sailor, which gives them the most robust life, would tell severely on the inhabitants of the country or the village. Hence, much of the value of active exercise depends on habits of life, either hereditary or acquired. There are kinds which seem to belong to some people or classes, and cannot, with safety, be adopted by others without long training.

The fashionable rage for athletic or gymnastic exercises is open to severe and deserved criticism, for incalculable injury may be done, and has been done, by undue and uncalled for physical strain. Dr. Richardson, in his *Diseases of Modern Life*, boldly says:

"There is no sign, there is no evidence anywhere that the greater cult-

ure of the physical strength has favored the longevity of the individual, or the vital tenacity of a race. The observations made by the physicians of the Greek, Roman, Arabian, and Italian schools, respecting excessive physical exercise and the maladies incident to it, admit of but one rigid interpretation, namely: That such exercise insures premature decay and early death. The facts to be elicited in modern times from the vital statistics of England, France and Prussia, lead equally to the inevitable conclusion that removal of excessive endurance tends to health and length of life, and that in each country, within its own population, the value of life is influenced to the favorable side by the reduction of the physical expenditure. The most striking fact of this kind is afforded in the history of the Jewish race. In no period in the history of this wonderful people, since their dispersion, do we discern the faintest approach to any system amongst them tending to the studied development of physical capacity. Since they were conquered they have never, from choice, borne arms, nor sought distinction in military prowess; they have been little inducted, during their many pilgrimages, into the public games of the countries in which they have been located; their own ordinances and hygienic laws, perfect in other particulars, are indefinite in respect to special means for the development of great corporal strength and stature, and the fact remains that as a people they have never exhibited what is considered a high physical standard. And yet the broad truth stands forth, that this race has not only endured the oppression of centuries, without being lost, but as it exists now, scattered here and there on the earth, in different countries, and amongst the most varied social and natural conditions, is, of all civilized races, the first in vitality. It would be impossible, and in truth unnecessary, to enforce any stronger argument as to the negative value of excessive physical exertion in sustaining the vital force of a race. In the course of centuries, the most powerful nations have died out, and empires of perfect physical beauty and chivalric fame have passed away. But through all these vicissitudes one race, cultivating none of the so-called athletic and heroic qualities, and following none of the exercises popularized as 'bracing,' 'hardy,' 'invigorating,' has held its impressive own, to remain a more numerous people in its totality than ever; a people still presenting a more tenacious life than its neighbors, and showing, as it is relieved of the cruel restraints long forced on it, the continuance also of mental force and of commanding genius, in art, in letters, in politics, in commerce, and in science." It may be added here that the mortality of the Jewish race from diseases of the chest, is very far below that of any other race. Among these diseases, those of the heart are enumerated.

There are two kinds of violent exertion which destroy the vitality of the heart:—

1. *Prolonged and systematic strain*, such as particular occupations require. This continued strain may be endured for years, and show no serious effects on the circulation. Among certain tribes of American Indians, a class are trained from childhood as "runners." These men become capable of running all day by the side of a horse or sledge, without appearing to show signs of fatigue. But they finally "wear out," and the majority of them die prematurely.

Dr. Richardson believes that in cases of heart-failure from prolonged daily strain, the injury begins in the right ventricle cavity. The walls of this chamber, which has to keep the circuit of blood supplied through the lungs, are naturally much thinner than the wall of the left ventricle, which carries the blood all over the body. If this right ventricle, which has to make, say 100,000 strokes in twenty-four hours, and thereby drive over the lungs 18,750 lbs of blood, be taxed beyond its natural power of endurance, if it has not a certain number of hours, say eight, for what may be called easy work or play, and another certain number of hours, say eight more, for work at less pressure while the body sleeps, it must of necessity weary in its duty. But the heart *must* supply itself with food—that is to say, blood—for its own nutrition, and whenever it fails to supply the body, it fails first to supply itself. Thus, from overwork it soon becomes enfeebled, and most easily in that part of it which feels primary fatigue. This weakness of the heart is not felt at first in vigorous persons, but when the age of forty or fifty is reached, it becomes very noticeable. None but medical men know how many persons die from this one source of physical failure, or how insidiously the symptoms of worn-out heart make their progress through all classes of the laboring community. The general symptoms indicating failure are that the victims begin to lose something of their physical power, not in the limbs, but in the body. The breathing becomes embarrassed from slight causes. Rest is more frequently required. They suffer unduly from alternations of heat and cold. They feel an internal exhaustion or vacuity, which they refer to the chest. Finally, some organic change in the lungs, kidneys or brain sets in, and ends fatally.

II. There is another kind of heart-failure much more sudden and fatal in its effects. It is that resulting from some very *sudden and violent physical strain*. This may result from excessive *action* of the heart, or from sudden *arrest* of action, or *over-distension*. There are also cases in which this sudden physical heart-strain has been complicated with some sudden mental emotion, like rage or grief. It is believed that actual *rupture* of the heart, a real "broken heart," has resulted from such double strain.

The effects of sudden, violent heart-strain may be brought on by several means. The most common is *running*. During this act the heart

has to make up the waste of force by excessive action. A healthy heart, which beats normally 72 per minute, will, when a person is running violently, beat as many as 120 per minute; and the *force* of its action is proportionately increased. Many people have perfectly healthy hearts who are not accustomed to violent running. In such, this act is as likely to injure the heart as it would any other muscular structure not accustomed to violent use. We will suppose that a healthy man, who never, or rarely, struck a blow with a heavy hammer or sledge, attempts to use one as a blacksmith does for many successive hours. What is the result? Undoubtedly such over-strain of the great muscles of the arm as will result in paralysis or serious inflammation.

I have treated many cases, and heard of many more, wherein serious and even fatal injury to the heart has resulted from *running to catch the cars*. Men or women who are accustomed to a quiet life in the house or office will thoughtlessly run violently to catch a street-car at the corner, or a steam-car at the station. There is often added to this physical exertion some mental anxiety. Nothing could be more dangerous and imprudent. The hearts of those leading a sedentary life are entirely unfitted for such violent exertion. The right chamber is generally injured thereby, because of the great exertions it must make to carry on the circulation through the rapidly moving lungs.

I well remember being called a few years ago to attend a lady who was well known as a woman of much literary culture, and high mental capacity. I found her suffering from an over-distension, or thinning, of the walls of the right side of the heart. She could not lie down because of the suffocating sensations which ensued. Nor could she walk across the house or up stairs without great distress. The heart beat very tremulously and feebly. She gave this history of her case: Only a year before she was in good health. She was not then aware, from any sensation in the chest, that she possessed a heart. In an evil hour, however, late one evening, on returning home from a visit in a distant portion of the city, she ran violently to catch what she supposed to be the last night-car. Her husband assisted her, and she reached it, but on entering the car she became blind and dizzy, and suffered from great oppression of the chest. On reaching home the oppression was attended with a sensation of great soreness, as if the heart had been bruised, and each beat was painful. She was attended by one of our best physicians who treated her for several weeks for congestion of the lungs, for there was a short, dry cough, with constant oppression of the chest. She never rallied from this over-strain, but constantly grew worse, until I found her in the condition described. I could not afford her more than temporary relief, for the heart was structurally diseased, and she died in a few months.

This is but a typical instance of the many cases now in existence in this city, Chicago, in which such over-exertion has resulted in permanent injury to the heart. After the great fire of 1871, hundreds of cases came under medical care, for serious cardiac disease incurred on that dreadful night when men and delicate women had to run miles to save their lives.

If such exercise will so seriously affect the average healthy heart, what will it do to one *already* weakened by disease? The enfeebled heart may be utterly destroyed by such over-exertion. I once knew a lady who, after running two blocks to intercept a car, suddenly dropped dead on entering it. An examination of the heart showed that it had died in an open and relaxed condition. It had failed to contract from utter exhaustion, and its cavities were filled with coagulated blood.

The foolish custom of climbing long stairways, as in public buildings or monuments, has seriously injured thousands. It is an exertion so unusual that the heart cannot withstand the intense strain. Many tourists, who have more ambition than judgment, have fallen victims to their mountain-climbing. Here the physical strain is aggravated by the rarified air in which they labor, which causes the heart, aside from the excitement of the exertion of the body, to beat with greater rapidity and force.

The dangers attending the popular games of base-ball, foot-races, boat-racing, and other violent competitive exercises, can scarcely be over-rated. The applause of the world and of admiring friends would be turned to sorrow if they knew the future trouble which may be the lot of those who strain every muscle to win their applause. If the votaries of these games were trained to them from their childhood, as were the Greeks for their Olympian games, the injury would be far less. The danger lies in the fact that but few have been so trained. They come from avocations where such physical training has not been practiced. I allude particularly to the youth who attend colleges and universities. So soon as they begin their studies they are enrolled in some club, and every leisure hour is devoted to violent exercise. In order to attain any degree of perfection in athletic strength, the functions of the brain must be neglected, or *should* be, for it is suicidal to tax the brain to severe study, and at the same time tax the body by intense physical exercise.

Those who have had opportunities of observing the effects of competitive athletic sports, especially in England, deplore their effects on the heart. They say that while the voluntary muscles are cultivated to such a degree, the involuntary are enlarged and strengthened in a corresponding degree; thus the heart becomes larger, thicker and stronger, and enabled to do more work. But there comes a time when this kind of a life must be abandoned, and the man return to the ordinary business pursuits. Then, when the

artificial muscular training has ceased, the voluntary muscles soon lapse down to an ordinary tone, but the involuntary muscles, of the heart especially, do not lapse in the same way, because that organ does not rest. It therefore remains in its acquired strength, all out of proportion to the rest of the muscular system. The man, instead of being benefited by his physical training, is seriously injured, and his future capacity for physical exercise is greatly hampered by the violent beating of an enlarged heart, of whose unpleasant action he is ever conscious.

It is time that all the foolish talk about the elevating and beneficial effects of spasmodic and acquired athletic sports should cease. The best medical men in other countries understand and proclaim the danger. Dr. Richardson says: "I venture to affirm there is not in England a trained professional athlete of the age of thirty-five, who has been ten years at his calling, who is not disabled." There must be no disproportion of strength between the heart and the voluntary muscular system. If there is, the whole body suffers. When a strong, robust man has had a rheumatic affection of the heart, without general muscular rheumatism, the heart becomes the weakest of all the muscles, and is therefore unable to supply the body with its proper amount of blood. Then the most remarkable results follow, and the victim usually dies of dropsy, or fatal lack of nutrition of some important organ.

CAUTION DURING CONVALESCENCE.

Great ignorance prevails among the public in relation to the condition of the heart after acute diseases. They do not know that it is left as weak as the rest of the body. The fact is, that during the progress of many prostrating diseases, and during convalescence from nearly all, the heart is very feeble. This is especially so in children and old people. Great care should therefore be taken by friends and nurses, that no undue emotional excitement seize the patient, or that any sudden or active movement be indulged in. Many people have lost their lives by an impatient, sudden motion, such as rising from the bed, walking across the floor, etc. The cause of death in such cases is found in a weakness of the heart, which results in fatal fainting from the shock of sudden labored action. While the body was lying, the weak heart had no difficulty in throwing the blood all over the body; but when the erect posture was suddenly assumed, it was inadequate to the task of propelling the weight of the blood *upward* to the head, and it was retained in its cavities, distending to the point of paralysis. In fact, death occurs from paralysis of the heart. The danger from this cause is greatest after acute rheumatic or other inflammations of the heart, or in patients who have been ill with some fever or inflammation of other organs, but

who have already some organic disease of the heart. The latter class should always be careful in their exercise. The organically diseased heart will pump the blood into all its various channels with sufficient force to carry on the functions of life, so long as its work is regular and uniform, but it may fail the moment it is taxed with any unusual labor.

THE HEARTS OF CHILDREN

Are peculiarly delicate, and easily deranged. I imagine you asking the question: "Do children have heart-disease?" I answer yes, and very often. Quite a large percentage of children are born with some organic disease of the heart. These diseases arise from two causes, namely: (1) *Arrest of development*; (2) *Ante-natal inflammation*.

Some of you may have seen cases which belong to the first class. Among the most common is that disease known as "cyanosis," or the "blue disease," in which the child assumes, soon after birth, a blue or purplish color, and it soon dies—few live to mature years. I ought to say here, that it is recommended that children born with such a disease be placed on their *right* side, with the head and shoulders elevated as high as 45 degrees, or nearly half erect. This allows the heart to work more easily, and sometimes prevents the arterial blood from mixing with the venous. It is this mixing of the two kinds of blood which causes the blue color that gives the disease its name. Cases have come under my care in which this position of the child had to be constantly maintained for days and weeks, or until the heart became able to carry on its work, or the malformation had been remedied. The child would breathe easily, sleep well, and have a good color so long as it was kept in the position I have described; but any change caused blueness, difficult breathing, and other symptoms.

There are certain diseases of children which may result fatally unless great care is taken that the heart is not overtaxed. Among these, rheumatism, diphtheria, scarlet fever and pneumonia are most prominent. Rheumatism usually leaves such injury to the valves that any violent motion excites the heart so much that the incompetent valves do not allow the blood to flow properly through the heart. Diphtheria is more dangerous to the heart than any other malady. You have heard of cases in which the child passed through an attack of this disease, and was supposed to be out of all danger. It would be allowed to sit up or walk about the room, when, to the astonishment of all, it has fallen down suddenly *dead*. Such cases are common. The child dies from paralysis of the heart, which has been poisoned by the virus of this fearful disease, just as the heart is poisoned by the venom of a serpent. After an attack of diphtheria or pneumonia children should be watched carefully, lest they make some sudden motion. They should be

kept quiet, and, if not too young, cautioned of the serious consequences that may follow such motion.

DISEASES OF THE HEART.

In the description of the circulatory system given above, we find that its functions are among the most important of the whole body. A disease affecting any portion of this system is of great interest, especially when it involves the heart. A very few years only have elapsed since anything like the present knowledge of this organ existed, either in its normal state, or when disturbed by disease; and from this new knowledge many diseases have been rightly located and previous errors exploded. We find that, in many instances, what was supposed to be apoplexy proved to be some heart disease, and, on the contrary, what was supposed to be disease of the heart was a disorder in some remote part, exerting itself on this organ through the action of the sympathetic nerves.

Diseases of the heart may be divided into two classes: Organic, consisting of some *structural change* in the organ; and functional, the result of *changed action*, dependent on influences outside of the heart itself. The latter are far the more common, and also attended with the less danger. In fact, in the organic diseases, the symptoms are often never felt by the patient, life perhaps terminating suddenly without warning.

As the functional diseases quite frequently occur, we will enumerate some of their conditions, and the causes which produce them. While the patient may not detect any difference between functional and organic disorders, he may be able to discover a connection between the action of the heart and some improper habit or condition of the body, the changing of which will perhaps be the means of removing the difficulty. Before passing to these remarks, the reader is advised to read what is said on "The Pulse," in the chapter on Signs of Health and Disease, and all the foregoing pages of the present chapter.

There may be persistent increased action, the pulse being quite regular, but ranging from 120 to 130 per minute, and continuing for weeks; then followed by an intermission, causing the sufferer in the meantime great anxiety and fear of organic disease of the heart, though it may not be affected by exercise.

Again, paroxysmal throbbing comes on suddenly, without apparent cause, but with violent beating of the heart, and a change in its regularity or rhythm. The patient has a feeling as though death were impending, which increases the trouble, as does also even the slightest motion.

Another form is irregularity and intermission in the beats, without increased force, the heart often being very feeble in its action. Such symp-

toms are terrifying, and the patient feels as if the slightest movement would cause death from the heart ceasing to perform its function. At the same time, this intermittent character may have existed from birth, and be no occasion for anxiety.

The causes of functional disorder are plethora, or too rich and too much blood; anæmia, or a deficient amount of blood; nervous disorders; dyspepsia, and gout.

Plethora overtaxes the heart, making it irritable, and thus increasing its action. Palpitation is usually the first symptom manifest, and causes anxiety. It usually occurs in men who have led an active life and have changed to luxurious, indolent and sedentary habits, and in women who tend to fat, and take little exercise.

Anæmia is due to a loss of the fluids of the body, and rarely arises without producing some disturbance in the heart's action. It occurs more often in women than men, the conditions of their sex rendering them more liable to losses of this character. We find, in addition to the functional heart-disorder, coldness of the extremities, headache, neuralgia, and constant dread of organic disease of the heart. The slightest exertion causes palpitation and difficult breathing, and the countenance becomes anxious and morbid from the constant dread.

Derangements of the nervous system cause disordered action of the heart. These may occur without the existence of anæmia or plethora, and may have their origin in any of a multitude of influences. Hysteria, excesses of various kinds, uterine disorders, the use of tobacco, tea, coffee and opium, dyspepsia in its various forms, mental anxiety, constipation, and the presence of gas in the stomach, are all causes of such affections.

Gout renders people liable to functional derangements of the heart, presumably because of the presence of lithic acid in the blood. This acid acts as an irritant on the nerves which go to the heart, and thus causes an increase in its action. These fits of palpitation generally precede the swelling of the parts, and subside when this condition takes place.

Functional disorder of the heart may also have its origin in low states of the system after fevers and other exhausting diseases; excessive muscular exercise; great excitement and fatigue; certain deformities of the chest. In the foregoing pages the reader will not only ascertain that very many common habits and actions lead to a great variety of the disorders which cause much anxiety, but will find the means of avoiding or correcting a large proportion of them.

Palpitation is one of the common symptoms of heart-trouble, and occurs in organic as well as functional disorders. The following table will aid one in telling the difference:

TABLE OF THE CHIEF DIFFERENCES BETWEEN ORGANIC AND FUNCTIONAL DISEASES OF THE HEART.

ORGANIC.	FUNCTIONAL.
1. Palpitation usually comes on slowly and insidiously.	1. Palpitation generally sets in <i>suddenly</i> .
2. Palpitation or distressed action, though more marked at one time than another, is <i>constant</i> .	2. Palpitation is <i>not constant</i> , having perfect intermissions.
3. Percussion elicits <i>increased extent</i> and degree of <i>dullness</i> in the region of the heart.	3. Dullness in the region of the heart is not extended beyond the natural limits.
4. <i>Lividity</i> of the lips and cheeks, congested countenance, and dropsical appearance of the lower extremities, are often present.	4. There is <i>no lividity</i> of the lips and cheeks, countenance often greenish, and, except in extreme cases, there is no dropsical appearance.
5. The action of the heart is <i>not necessarily quickened</i> .	5. The action of the heart is generally <i>quickened</i> .
6. Palpitation often <i>not much complained of</i> by the patient, but occasionally attended with <i>severe pain extending to the left shoulder and arm</i> . (See Angina Pectoris.)	6. Palpitation <i>much complained of</i> by the patient, often with <i>pain in the left side</i> .
7. Palpitation is <i>increased by exercise</i> , stimulants and tonics, but is relieved by rest.	7. Palpitation is <i>increased by sedentary occupations</i> , but <i>relieved by moderate exercise</i> .
8. Is more common in the <i>male</i> than the female.	8. Is more common in the <i>female</i> than the male.

While such affections of the heart as we have named are usually not attended directly with bad results, there are cases in which death has taken place, as in angina pectoris and neuralgia.

People who suffer from disturbances of the heart can rarely tell the nature of the trouble, and only in those cases in which some condition or habit of the body is known to be the direct cause can one tell whether the disorder is functional or organic. It is, therefore, of the utmost importance that, in all cases where there is a doubt as to the real condition, a physician be consulted.

People are generally more anxious and alarmed about a nervous disorder of the heart than if it were organic. Its constant or paroxysmal disordered action worries and annoys them, and they cannot help thinking of the heart; and the more one fixes the mind upon that organ, fearing it is diseased, the worse it acts.

There is a marked correspondence between functional disorder of the heart and the same condition of the lungs. In both, the sufferer is anxious and loses hope. If, on the contrary, the heart or lungs be structurally diseased, the patient is calm and hopeful, and never seems to appreciate his

real condition. By bearing these facts in mind, one can decide quite certainly upon the nature of the disorder and its real danger.

TREATMENT.—This consists in palliative and curative measures, the former to relieve the immediate distress, the latter to prevent a return and remove the cause.

Aconite is needed if the disturbance is the result of fright; palpitation from physical excitement and mental emotion; when occurring in a plethoric person. Ignatia, if from sudden grief, nervous disorders or hysteria.

Scutellaria.—Paroxysms of palpitation from inordinate excitement, coming on in a spasmodic form.

[Convallaria (lily of the valley) is superior to any other known remedy for functional palpitation of the heart, a single dose of ten drops often arresting it in less than half an hour.—HALE.]

In cessation of the heart's action, stimulants should be used at once, such as brandy or other alcoholic liquor, camphor, amyl nitrite or ammonia, aided by the mustard foot-bath, mustard plasters or hot water over the heart with brisk rubbing of the extremities, the patient lying down.

When the difficulty is the result of plethora, this habit of the body should be relieved by a proper diet. All rich and stimulating food should be avoided, and small meals be taken, coupled with active exercise. *Vera-trum viride*, half-drop doses in water three or four times a day, will help to remove the plethoric condition, if it be continued some time. Bromide of ammonia, two or three grains after each meal, will have a like effect.

Anæmia should receive a contrary treatment, and articles of diet which tend to enrich the blood should be used. Active outdoor exercise, in localities free from malarial influences, should be taken. *Ferrum metallicum* in some form will be of service, though some cases, as those of a nervous origin, will not be benefited by its use. It is applicable in those cases which are the result of faulty assimilation of the food. There are many preparations of iron, but the one mentioned will be the most often useful. When the anæmia is the result of nervous prostration, the hypophosphite of lime, soda or potassa, phosphoric acid, *nux vomica*, *ignatia* and *strychnia* will be found useful.

[The most useful remedy I have ever used in heart-weakness, with deficiency of blood, is a preparation from my own formula, and manufactured by Chapman, Green & Co., Chicago. It is named "Syrup Nitrogenized Iron, *Digitalis* and *Wild Cherry*."—HALE.]

When the irritation is due to a derangement of the digestion, attention should be given to this function, and the reader will refer to the chapter devoted to these disorders.

If the difficulty arises from uterine disturbance, the directions upon

diseases of this character, as given in the chapter on the Maid and the Wife, the Mother and the Babe, will assist in selecting the proper remedies.

INFLAMMATION OF THE HEART.

This disease resembles pneumonia, or inflammation of the lungs, so closely that it is difficult for a person unacquainted with it to distinguish the difference. It is indicated by violent pain in the left side of the chest, near the heart, with painful, agonizing pressure in that part; difficult breathing; quick, feeble, irregular pulse; high fever; fits of fainting, and great anxiety. Distinguishing features in this disorder are that the pain is confined to one spot; there is more oppression and less cough; and the patient can lie down more easily than in pneumonia. The surface of the body is not so hot; the hands and feet are usually cold.

TREATMENT.—Happily this disease is of very rare occurrence. The treatment is much the same as that prescribed for pneumonia, and the reader is referred to the article on that subject, the accessory measures applying in both diseases.

HEART-CRAMP.—ANGINA PECTORIS.

This disorder, usually occurring in middle or advanced life, comes on with a fit of severe, acute pain, which centers in the heart and extends over the chest into the shoulder and arm. There will be an agonizing sense of anxiety; faintness, and fear of instant death; palpitation; difficult breathing, so that, if walking, the patient is obliged to stop and cling for support to the first object which is presented. The face is cold, and covered with a clammy sweat, the feet and hands cold, and sometimes dark-colored. These conditions may terminate in a few moments, or last several hours, and recur with increased severity, till at last one proves fatal.

The causes are diseased heart or arteries, weakening of the muscular coating of the heart from deposits of fat, the heart's action being thus impaired. It may be brought on by over-exertion, flatulent distension of the stomach, mental excitement, or frightful dreams.

TREATMENT.—The treatment must be under medical care. Until such help is obtained, during a paroxysm apply a warm bran or mustard poultice to the chest, and warmth to the extremities; give frequent but small doses of brandy or some other stimulant, keeping the patient quiet, and not allowing him to talk.

Aconite may be given when there is a great sense of suffocation, with difficult breathing.

Arsenicum.—Extremely difficult breathing; marked debility; pale, haggard face; feeble and irregular pulse; a dread of immediate death. This remedy will also be found useful in warding off attacks.

[All persons subject to heart-pang should carry some “pearls of amyl nitrite,” or a vial filled with cotton saturated with fifteen or twenty drops of amyl. Upon the first appearance of the pain, the medicine should be rapidly inhaled until the distress is relieved.—HALE.]

Care should be taken with the food, and none but what is easily digested and nourishing be used. All sudden or active exercise or exertion must be avoided.

INFLAMMATION OF THE VEINS.

This appears in one of two forms, either as an inflammation of a single vein, as the result of a cold, which disappears without serious trouble in many cases, or as an affection of a considerable number of veins, which ends in suppuration. It is quite rare in its occurrence, and results from mechanical injuries, the taking of a cold, excess of muscular exertion, and confinement of women. In the last-named case, it is known as *phlegmatia dolens*, or milk-leg, since it comes on usually with the flow of milk into the breasts. The disease is sometimes extremely dangerous, especially when affecting the large veins near the heart. Its favorite locality is in the thigh, from which it often implicates the whole limb.

The symptoms are not always well marked. When the affected vessels are near the surface, they may be felt with the finger as hard, rigid cords, sometimes knotted, with a reddish line following their course. This discoloration becomes more diffused as the disease progresses, the surrounding parts growing darker, sometimes almost of a purple hue. The tissues involved swell, and often pit on pressure. The pain is intense, and is of a burning, smarting nature; there is loss of appetite, with more or less fever, and chills if suppuration ensues; the skin is hot and dry; nausea often sets in, and sometimes vomiting; constipation may come on, and the urine be scanty and high-colored. Excessive prostration and delirium are usually accompaniments of the severe form.

TREATMENT.—The treatment should be conducted with extreme caution, and with skilled medical advice. Until such attendance can be secured, the patient should be kept quiet on a bed, and if there is much pain, a lotion of aconite should be applied. When the severity of the pain subsides, cover the parts with cloths wet in the extract of hamamelis, or Pond's Extract, and cover them with oil-silk.

Aconite is needed for high fever and hot, dry skin.

Arnica, if the disorder results from an injury, may be alternated with aconite.

Belladonna is indicated by delirium; dark-red and slimy surface; red, dry tongue. [Hamamelis is a specific for this disease.—HALE.]

The diet in the beginning should be light and unstimulating. When suppuration takes place, highly-nourishing food is needed.

ENLARGED VEINS.—VARICOSIS.

When the coats of the veins become weakened by lack of nutrition, by pressure from obstructed flow of blood, and like means, they become dilated to such an extent that the valves fail to support the blood on its way to the heart. From this, the vessels become distended, and in many cases burst and form a fine network, giving a blue appearance to the tissue surrounding them. The difficulty is mainly confined to the lower extremities, except when it takes the form of piles.

The affected veins are tortuous, knotted, of a dull-leadene hue, often discoloring the parts, and producing considerable swelling of the limb. When the horizontal position is maintained for any considerable time, the blood flows out of the veins, and they are greatly diminished in size.

Anything which obstructs the circulation of the blood induces this disorder, as tight shoes or stays, a tumor, pregnancy (the most common cause), stubborn constipation, and hereditary predisposition.

This condition causes some aching pain upon walking any distance, or upon long standing, and may be attended with bleeding from bursting of the veins, or with ulcers from imperfect circulation and want of nutrition of the skin.

TREATMENT.—The best means of relief is from moderate compression, by means of a closely-fitting bandage, or the elastic stocking. The pressure should be quite gentle and uniform, be applied in the morning, before the patient puts the foot to the floor, and be continued through the day. Where a single vein or a small portion of it is affected, a strip of adhesive plaster applied firmly over that portion will afford prompt relief. The limb should be bathed every morning, and rubbed dry before applying the bandage.

Hamamelis.—This remedy should be given internally, and also applied externally in the form of a lotion, one part of the strong tincture, or of Pond's Extract, to two parts water. Wrap the parts in a compress wet in the lotion and cover with oil-silk, placing a bandage over all. This should be worn during the night.

If any portion of the surface about the varicose veins should become

tender, excoriated or broken, adhesive plaster should be applied firmly, drawing the edges of the sore together; this will often prevent the formation of ulcers.

ANEURISM.

Aneurism consists in the dilatation of a portion of an artery, and usually occurs in the large one in the upper part of the chest, which leads from the heart. It may, however, have its seat in any part of the system, especially in the base of the brain, in the latter case often bursting the artery, and producing apoplexy. It occurs more frequently in men than in women.

The common cause of aneurism is a degenerated state of the coats of the artery, usually as a result of a low state of the system. It is sometimes a consequence of an injury. It may be distinguished from an abscess or other swelling by the marked pulsation of the artery which may be felt in its enlargement.

TREATMENT.—This is often of a surgical character. Those cases which are beyond surgical means may be benefited by aconite or veratrum viride.

Arnica, when an injury is the cause, may be alternated with either of the two remedies just named.

Phosphorus is recommended as a constitutional remedy to prevent further degeneration of the coats of the vessels. When the disease attacks the aorta in the chest, it is desirable that the patient lie down. The diet should be light and unstimulating.



CHAPTER VI.

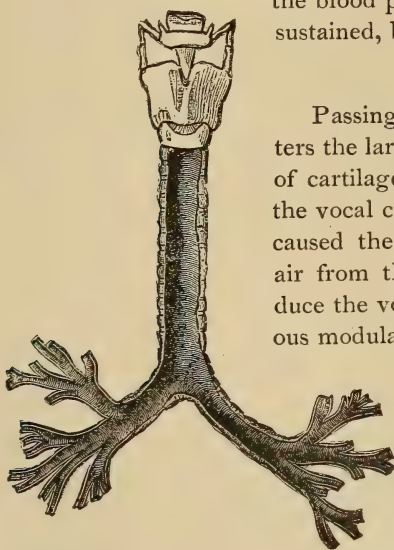
THE ORGANS OF RESPIRATION.

ANATOMY AND PHYSIOLOGY.

IN the act of breathing, the air enters either directly through the mouth, or through the nasal passage which leads from the nose to the back part of the mouth. This first step in respiration is a matter of frequent and familiar observation, but a study of several organs is involved in an understanding of the functions by which the voice is formed, the blood purified, the health assured, and life itself sustained, by means of the air which surrounds us.

THE LARYNX.

Passing through the throat, the inspired air enters the larynx, which may be described as a cup of cartilage. Across the top of this are stretched the vocal cords, in which are caused the vibrations by the air from the lungs that produce the voice and its marvelous modulations.



35. The Upper Portion is the Larynx; below the Larynx is a Vertical Section of the Windpipe, which divides into the large and small Bronchi, or Air-Tubes.

THE EPIGLOTTIS.

The top of this cup is also supplied with a valve, or lid, called the epiglottis, which opens and shuts during breathing.



36. *d*, Epiglottis. *ee*, Vocal Cords.

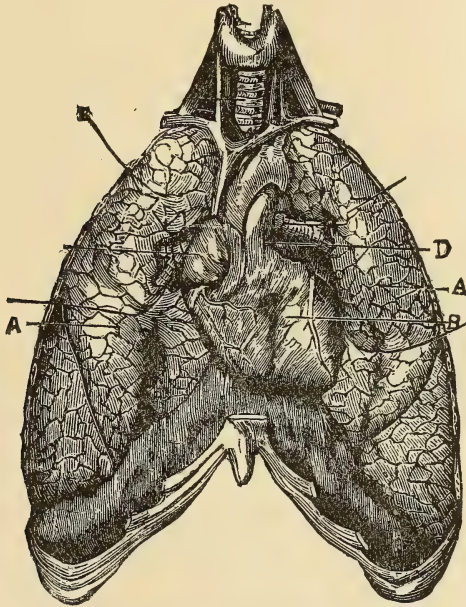
It also closes up

against the base of the tongue in the act of swallowing, so that food and drink may pass over the top of the larynx and enter the gullet. If this lid is lifted during eating, by a sudden breath, laugh or cough, some

substance may be admitted beneath it and cause violent coughing and distress.

THE WINDPIPE AND BRONCHIAL TUBES.

At the lower end, the larynx draws together to form the upper part of the windpipe, or trachea. This is a firm tube, composed of rings of cartilage, which passes down the front part of the neck into the chest, while the gullet, or œsophagus, runs down behind it. It divides into two branches, called the large bronchi, or bronchial tubes, one entering either lung, in which it divides and subdivides into other branches of ever-diminishing size, known as the small bronchi, or bronchial tubes. The latter finally terminate in delicate clusters of minute air-cells.



37. ORGANS OF THE CHEST.

The Upper portion shows the Larynx and Windpipe.
A, Lungs. D, Pulmonary Artery. B, Heart.

THE LUNGS.

Within the chest are the lungs,



38. MAGNIFIED AIR-CELLS.

c, Limit of Bronchial Tube.
a, a, b, b, Two Groups of Air-Cells.

two large lobes with an average capacity, in the adult, of about five pints. They are composed of a light, spongy substance as their basis, the bronchial tubes and air-cells mentioned above, and a complicated net-work of blood-vesicles running in all directions through the whole. The lungs envelope the back and sides of the heart, with which they occupy nearly all the cavity of the chest.

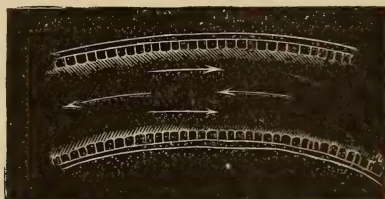
Entirely surrounding the lungs is a delicate membrane, called the pleura, which works smoothly upon a similar membrane, the pericardium, enveloping the heart. The air-tubes and cells are also lined with a mucous

membrane, and all of these lining and enveloping membranes are moistened, or lubricated, by their own secretions.

Upon the membrane lining the smallest air-tubes are fine, hair-like elevations, or cilia, which are of fascinating interest. The microscope reveals the fact that they keep up a constant waving motion from within outward, by which, it is plausibly thought, dust and other fine matters, that may be making their way into the lungs, are swept back as by little soft brushes. At the same time, the air is fanned out of the deep recesses of the lungs on the sides of the tubes, the vacuum so produced in the air-cells being filled by a current passing in between the outgoing ones.

THE DIAPHRAGM.

Between the chest and abdomen is the diaphragm, a thin, dome-like partition which, in its normal position, points upward into the chest. When it contracts, it is drawn downward, leaving a space in the cavity of the chest. By the action of other muscles, the ribs are lifted and spread out,



39. CILIA.

thus still more enlarging the chest. The lungs expand to fill the empty space, and air rushes into them. This is "taking a breath," or an *inspiration*. Very soon the diaphragm relaxes and the ribs are brought down, pressing against the lungs and expelling the air. This is an *expiration*, and, with the inspiration, completes a *respiration*.

In a state of health, there should be from fifteen to twenty respirations in a minute, commonly seventeen or eighteen, that is, about one-fourth as many as the beats of the heart, or pulse. Any substantial departure from this, whether above or below, should be taken as evidence of some disorder.

THE OFFICES OF BREATHING.

By referring to the description of the circulation of the blood, in the anatomy and physiology of Chapter V, the reader will see that impure blood is gathered from the body into the right side of the heart, and is thence sent to the lungs. In the minute blood-vessels which run everywhere in the midst of the air-cells in the lungs, it comes in contact with

the pure air taken in by respiration, draws off oxygen, the life-giving element, gives off poisonous carbonic acid and worn-out tissues, and, in its purified state, goes to the left side of the heart, whence it is driven on to rebuild the waste in all parts of the body. Impure fluids of the body are also expelled by respiration, through the breath. The purification of the blood and expulsion of worn-out and deleterious matters are the offices of respiration.

COUGH.

Cough, being a symptom rather than a disease, may accompany a variety of diseases, and arises from many conditions. Oftentimes its character indicates the condition which produces it, and, as such, affords many signs to guide one in distinguishing the disease.

When cough is the result of irregularity in the digestive functions, from chronic derangement of the lining membrane of the stomach, from the presence of some irritating matter in the bowels, or from intestinal worms, these conditions should first be removed; and if the trouble still continues from having engendered positive irritation of the respiratory tract, then treatment should be directed to these parts.

If cough attends some evident trouble in the respiratory tract, it may arise from congestion, inflammation, catarrh or cold, the deposit of tubercular matter in the air-cells, or nervous irritation, causing spasmodic contraction of the air-tubes.

A short dry cough is an evidence of some acute inflammatory affection, and when accompanied with sneezing, watery and inflamed eyes, fever, and nausea, it usually indicates measles.

Painful, hacking cough, with stitching pain in the chest, accompanied with short, quick, difficult breathing, and fever, points to inflammation of the lungs.

A loose, rattling cough, with inability to raise anything, with constant titillation, is an evidence of inflammation of the back part of the throat, upper portion of the windpipe, or bronchi, and is usually of a catarrhal character.

Foreign bodies in the throat, as a hair, fish-bone, tumor, or enlarged palate, may produce cough, usually accompanied with an effort to swallow the offending substance.

A tendency to cough during or after any exertion, rapid motion, speaking, laughing, excitement of whatever nature, or derangements of the system in general, denotes a lung-affection, and usually one of an organic character.

Chronic dry cough, with difficult breathing, and induced by the least

exertion, accompanied with stitching in the chest, and an increased temperature of the body during the day, or at some special time thereof, is an evidence of tubercular deposit in the lungs; and when this increase of temperature is persistent, with loss of flesh, it is positive proof that such condition exists.

Never neglect a cough of any kind.

NASAL CATARRH, OR COLD IN THE HEAD.

The common affection known by the above terms consists in an inflammation of the mucous membrane lining the air-passages of the head. The membrane, at first dry, afterward gives out a watery discharge, usually attended with general lassitude, slight shiverings, weight in the head, sneezing, and watery eyes. There may be thirst, more or less fever, pain in the limbs, and loss of appetite. As the disease progresses, the discharge becomes thicker, yellowish or grayish, and with this the symptoms soon subside under a vigorous condition of the system or judicious treatment.

The affection may extend to the throat, bronchial tubes, or to the lungs, causing sore throat, bronchitis, pneumonia, and the like, or may result in croup, erysipelas, toothache, neuralgia, diarrhœa, and either of many other diseases, a description of which will be given hereafter. Catarrh may, from repeated attacks or neglect, become chronic, and is at times very persistent, and sometimes serious.

TREATMENT.—This consists in both local and internal medication, the disease being one of those in which the patient's own endeavors are relied upon to a great extent. Persistence and patience, especially in the chronic form, are necessary, and through them only, in many cases, is a cure effected.

An essential auxiliary in this course is cleanliness. The folds of the mucous membrane furnish receptacles for the deposit of the secretion which, from its acrid and irritating character, causes a continuation of the inflammation. This should be thoroughly removed by some simple wash which will change the character of the secretions, and be so used as to avoid any irritation from the application. The snuffs, medicines, douches, inhalers and the multitude of other appliances which are guaranteed to cure, should be avoided, and, in cases which have become chronic, a physician who has both skill and time should be consulted. A cure is to be resolutely sought, for statistics show that seventy-five out of a hundred cases of consumption arise from neglected or improperly treated colds.

The best instrument for making local applications to the nose and back part of the mouth and throat, and for cleansing the parts, is an atomizer. In selecting one, pains should be taken to secure that which is most easily managed and has the indorsement of a competent judge. Such an instru-

ment is certainly far preferable to douches, as the latter are now made. A weak solution of either salt and water, potassa nitrate, hydrastin, or sanguinaria, may be used in the atomizer once or twice a day. If the breath is very offensive and the discharge foul, relief will be afforded by the use of a solution made on this formula:

Carbolic acid, 20 per cent. solution,	10 drops.
Pure glycerine,	1 teaspoonful.
Water,	6 teaspoonfuls.

Mix.

Another good solution is this:

Permanganate potassa,	2 grains.
Water,	8 teaspoonfuls.

Mix.

As the mucous membrane in the different stages of acute and chronic catarrh is the same, unless there has been ulceration or destruction, and as the medicines necessary for a cure would apply in both, it will not be necessary to separate the two forms, but it will suffice to give the indications for the remedies applicable to both.

Aconite.—In the commencement, for dry state of the membrane from dry, cold winds; and for fever.

Arsenicum.—Burning, corroding, watery discharge, with sneezing.

Belladonna.—Dull pain in the forehead; redness of the eyes; dry condition of the nose; red and sore throat.

Mercurius.—Dropping of water from the nostrils; nose swollen, red and sore; pain; catarrh extending to the ears, worse in a warm room; when the catarrh is of an epidemic form.

Nux vomica.—Nose dry, with stuffy feelings; discharge thick; headache; constipation.

Iodine.—Chronic form with offensive discharge; nose red and painful; scrofulous system.

Pulsatilla.—Thick, yellow, greenish discharge; loss of smell, appetite and taste; better in the fresh air, and worse in a warm room.

During the acute stage, medicine should be given every one, two or three hours; but when the affection has become chronic, once or twice a day is sufficient.

SORE THROAT.

Ordinary sore throat is generally caused by cold, and usually attended with discharge from the nose and slight fever. The throat is inflamed, having a bright-red color, and may or may not be ulcerated. Swallowing is painful; otherwise there is usually not much pain.

TREATMENT.—Belladonna should be given when the throat is highly inflamed, feels raw, and is of a deep-red color.

Aconite.—When there are considerable dryness, roughness and heat in the throat, with general fever. When the attack is very severe, aconite and belladonna may be given in alternation.

Mercurius.—Throat swollen, very painful on swallowing, and filled with mucus; pains extend to the ear; discharge from the ear.

Relief will often be given by a piece of linen or flannel thoroughly wrung out in cold water, folded in two or three thicknesses and wrapped around the throat, being then covered with two or three folds of dry flannel. It should be applied only on going to bed.

QUINSY.—TONSILLITIS.

When an inflammation arises in the tonsils we have what is generally known as quinsy, or tonsillitis, affecting either one or both tonsils. The tonsil is much swollen and very red, as also are the surrounding parts; headache is not uncommon; there is usually some fever, and it may run very high; swallowing is more painful and difficult than in simple sore throat. The disorder may result in abscess of the tonsil or subside before that stage is reached.

TREATMENT.—Aconite is needed at first for much fever; headache; stinging pains in the throat.

Mercurius is indicated, in a later stage, by much swollen throat; great quantity of saliva; foul breath; ulceration of the mouth and throat.

Hepar has much efficacy after matter has formed. It hastens suppuration, lessens the engorgement, and, if continued, eradicates the predisposition to the disorder.

Nux vomica is especially useful in many cases, since this disease is so often due to deranged digestion. Cases arising from this cause, and marked by constipation, dull headache and coated tongue, will be relieved by this remedy.

The throat-compress may be used as for sore throat. For a severe attack, a hot poultice may be applied, extending up to each ear.

ENLARGEMENT OF THE TONSILS.

The tonsils may be affected by a chronic enlargement which not only causes much discomfort, but also has a bad effect upon the organs of breathing by obstructing the entrance of the air into the lungs, especially during sleep. To this is often due the choking, rattling breathing of children. Its subjects are those who are of a lymphatic or scrofulous temperament, disposed to glandular enlargement and disordered digestion.

TREATMENT.—The treatment was formerly surgical, in the main, the removal of the tonsil being deemed the best method of cure. Happily this pernicious and unnecessary practice has given place to a wiser and better method. The first step is a resort to measures for toning up the body to render it less susceptible to atmospheric changes, which are one of the principal exciting causes. Other conditions favorable to the development of the affection need also to be corrected by a general or special regimen, as deranged digestion, taking cold, and frequent attacks of quinsy, or acute inflammation of the tonsils. The vigor of the body is promoted by outdoor exercise, cool salt-water bathing and nutritious diet, the patient meanwhile guarding against colds and indigestion.

Baryta carbonica is useful for children of a pale waxy skin, who are affected with the enlargement, and are disposed to frequent attacks of acute inflammation of the tonsils. Hepar is also adapted to persons disposed to the acute affection, and to those who are of a scrofulous tendency and subject to catarrh of the nose and throat. These remedies should be given once or twice a day and may be continued for several months. Patience will doubtless be requisite.

Cod-liver oil, a food rather than a medicine, will be found a valuable adjunct in most cases, and there are few who will not be benefited by it. Care should, however, be taken not to administer it when the stomach fails to properly assimilate it. It is best borne when given in small quantities, a teaspoonful or less after the morning and noon meals.

The local treatment consists in making direct applications of lotions and washes to the tonsils. Though this, as well as the internal treatment, is best done by a physician, it is given here because this ailment is not often under such care. One of the best local remedies is made as follows:

Tincture of iodine, 1 drachm.

Glycerine, $\frac{1}{2}$ ounce.

Mix.

Make use of this lotion to paint the tonsils once a day, by means of a camel's-hair brush. Another good application, to be used in the same way, is made of one drachm of tannic acid to one ounce of glycerine, well mixed. Spraying the throat with a steam or other atomizer is very beneficial. Hydrastia may be used in this way once or twice daily, a half-teaspoonful of fluid hydrastia being put into an atomizer half-full of warm water. Five grains of the crystal bichromate of potassa in an atomizer half-full of water, used as directed for hydrastia, will be serviceable. A persistent use of these measures, with a careful observance of laws for the promotion of the general health, will render the knife unnecessary in this common and troublesome disorder.

CROUP.

Membranous croup is a disease of small children particularly, though it may occasionally attack adults. It is distinctly characterized by difficult breathing of a peculiar crowing sound, with hoarse cough. It usually begins as a catarrh, with fever and hoarseness, lasting two or three days before the child is thought to be in any danger. After a day or two, and usually at night, the symptoms become worse, the fever increases, the child has spells of suffocation, the cough and breathing have a ringing sound, and the voice is suppressed to a whisper. This lasts from a few minutes to an hour or more, when the child has relief for several hours. The greatest danger is from suffocation. Death may occur in two or three days. If not, the symptoms may gradually become better.

TREATMENT.—A physician should be consulted early, even before the symptoms have much increased, for the disease is one of rapid progress and great fatality when fairly seated. The child should be kept warm; the air should be moist, and can be kept so by constantly boiling a kettle of water in the room, to which eight or ten drops of iodine may be added with benefit.

Aconite should be given at first, for fever; cough; and for the spasm of the larynx which causes suffocation. It may be continued either alone or in alternation with some other remedy.

Spongia or sanguinaria, given in alternation with aconite, will often control the symptoms better than aconite alone. Give kali bichromicum if the above does not relieve, and there is a deposit of membrane, the throat being red and inflamed, and the symptoms worse toward morning, with thick yellow fur on the tongue. Hepar is good when the cough becomes loose; and in latter stages of the disease. Tartarus emeticus is indicated by loose, rattling cough, with difficulty in raising the phlegm.

If there be great danger of suffocation, and the breathing difficult and loud, put five or six drops of tincture of iodine in a half-pint of boiling water and allow the child to inhale the vapor until relief is given, repeating this as it may be subsequently required by a recurrence of these symptoms. The vapor arising from slaking lime has a wonderful effect in this disease when the deposit has formed. It dissolves the membrane, lessens the irritation, and thus prevents paroxysms of suffocation. It is best used as follows: Make a tent of bed-clothing or other material around and over the bed in which the child is lying; put therein a pail or other vessel containing a few pieces of fresh lime, and pour on the latter a small quantity of boiling water, replenishing the water as it is needed. This treatment may be continued for some hours, if need be.

INFLAMMATION OF THE LARYNX.

Laryngitis, or inflammation of the upper portion of the windpipe, is not an uncommon disease. It is not dangerous, generally; but may be when there is much swelling, as it occasions suffocation. It usually comes on with hoarseness; tickling sensation in the windpipe; hacking cough; frequent attempts to clear the throat; difficulty in swallowing. If the attack is very severe, the cough will be painful; there will be frequent breathing; loss of voice above a whisper; fever; flushed face; at times, symptoms of suffocation. This disorder resembles croup very much in its symptoms.

TREATMENT.—Aconite should be given in the earliest part of the disease, when the fever-symptoms are prominent; but, after the first day or two, it is not so useful. Spongia is indicated when the cough is hoarse, hollow, and comes on at intervals, especially at night, with little or no expectoration. Hepar is useful for symptoms similar to those for spongia, but there is considerable expectoration, and the cough is loose but hoarse. Hoarseness and weakness of voice caused by singing or much speaking is generally relieved by hepar. Phosphorus for hoarse, dry cough; constant hacking; delicate constitution. Mucilaginous drinks, such as gum-arabic water, or syrup of tolu, are admissible, and often give great relief.

BRONCHITIS.

Bronchitis is of two general forms, acute and chronic, which differ somewhat in their character, as well as in their duration. Acute bronchitis is an acute inflammation of the air-tubes of the lungs, greater danger attending such affection of the smaller tubes than the larger ones. When the large and middle-sized tubes alone are affected, there will be a tickling sensation in the throat; soreness or pain under the breast-bone; breathing slightly oppressed and somewhat hurried; fits of coughing; and slight fever. The expectoration is at first clear mucus and frothy, changing to a yellow or greenish phlegm; and the cough becomes looser, and continues, with expectoration, for some time after the other symptoms have subsided.

Aged people and young children are more susceptible to an inflammation of the smaller tubes than are the middle-aged. The frequency of an attack, and the danger of suffocation which attends it, make it one of the most important diseases of early childhood. The first symptoms resemble those named above, but circulation soon becomes more obstructed; the lips and cheeks become livid; the breathing more hurried, and the pulse more rapid, while the temperature may not be very high. There is a great tendency to prostration, and to suffocation from the want of power to expectorate. The disease, if favorable, begins to

decline between the fourth and eighth days, the breathing becomes easier and the expectoration thicker. When not favorable, children generally die in convulsions from suffocation, and older people with delirium and deep sleep.

TREATMENT.—This disease, being of an inflammatory character, is usually ushered in with more or less fever. Aconite will be found useful, in the commencement, for high fever; dry skin; restlessness; when the disorder is the result of exposure to cold or wet. Belladonna is indicated by hot skin, with inclination to perspire; soreness; when the child cries out in coughing, and starts in its sleep. Bryonia is of great importance when there is much soreness; child cries when moved; breathing short and catching; cough tight, and worse through the day. Give hepar for loose cough, worse in the morning, and after the preceding remedies.

Tartarus emeticus, for paroxysm of suffocative cough, with loose expectoration; wheezing; the whole chest affected. This remedy is particularly adapted to old people.

In acute bronchitis, the diet should be light and limited to such articles as gum-water, barley-water, gruel, beef-tea and jelly. Water should be given freely, and many times it produces profuse perspiration when drunk in considerable quantities. During the latter effects the patient should be covered with thick blankets.

To prevent repeated attacks in those who take cold easily, cold bathing in the morning is highly beneficial, and, in cold weather, a chest protector should be worn. Care should be taken by people of delicate constitutions, and the room should be warm when a bath is taken. The beard worn full on the face and neck is often the means of curing men subject to this disease.

PNEUMONIA.

This is an inflammation in the lungs, and is of much importance, owing to its frequency as well as to the vital character of the organs attacked. It is most liable to occur during the ages from twenty to forty years; old people are less liable to it, and children under five and six years of age are seldom affected with it. It may attack both lungs, or but one; the former condition occurs in about one out of eight cases, and in the latter the right lung is more often involved than the left. It generally begins with a chill, which is at times violent, and is followed by high fever and great thirst. The skin is hot and dry, the face flushed, the pulse quickened, and extremely rapid breathing is peculiarly characteristic of pneumonia. Very soon the patient has pain in the region of the shoulder-blade and under the breast-bone, dull at times, sometimes quite sharp. A short, frequent cough sets in, and lasts throughout the disease. The expectoration is also charac-

teristic of the disease, and at first is simply mucus, but becomes sticky and mixed with blood, which gives it a rusty or reddish-brown appearance. Later on, the amount of blood raised may be considerable. Headache is common; delirium may be present, and generally indicates danger. The urine is scanty and high-colored, and has a heavy deposit, resembling brick-dust. As the patient begins to recover, the cough increases, the expectoration is in greater quantities, and loses its tenacity and rusty color. The breathing becomes slower, the patient rapidly recovers, and, at the end of two weeks, all symptoms of the disease have usually disappeared. Pneumonia may be complicated by symptoms of typhoid fever, when it is called typhoid-pneumonia. The inflammation very often extends to the pleura, or covering of the lung, causing a sharp, stitching pain, which is so common in pleurisy. This complication is generally called pleuro-pneumonia.

The causes are severe or long-continued exertion; over-fatigue; prolonged cold or wet; lying on damp ground; exposure to cold or wet wind for several hours; getting heated at work or play, and sitting on the damp ground until chilly; the chill, operating on the exhausted body, causes extreme congestion, or flooding of blood in the lungs, the circulation of which has been weakened by the previous violent breathing.

TREATMENT.—Aconite, at the commencement for the congestion. Happily the introduction of this remedy has driven the lancet out of medical practice, and consequently lessened the mortality of the disease beyond all account. In no case will the relief be less speedy than in blood-letting, and this remedy is infinitely better, as it is not attended with the exhaustion which is one of the most serious results after the loss of blood. The special indications for its use are intense fever; hot, dry skin; quick, hard pulse; deep, bluish redness of the face. It should be given in the very earliest stage, and many times will arrest the congestion, and, by restoring the obstructed circulation through the lungs to a normal condition, check the disease in its first stages. Bryonia, another important remedy, is indicated when there are violent, stitching pains. It may be given at the outset in alternation with aconite, when the symptoms for the latter exist, or, after the fever has abated, when any motion increases the pain, and there is great thirst. It is especially adapted to the complication known as pleuro-pneumonia. Phosphorus may also be given, at the commencement of the disease, if there be a constant dry, hacking cough; a gluey, sticky discharge, sometimes tinged with blood; and when the bronchi are affected. Its use, however, is more especially indicated in the latter part of the disease. Sanguinaria is indicated, in the second and third stages, by extremely difficult breathing; tough, reddish-brown spittle; burning, stitching pain in the chest; small, quick pulse; red and burning cheeks; cold hands and feet.

Tartarus emeticus, a long-used and efficient remedy, is seldom applicable to the primary stage, but is of more value when the disease has extended to the air-cells, and is attended with free exudation and expectoration.

The patient must be kept very quiet, and should be lightly but warmly covered, the temperature of the room being from 60° to 65° F., with free admission of fresh air. Apply a poultice of linseed meal to fit the chest; or, if there be great pain or soreness, spread the poultice with ground mustard, letting it remain until the surface is red. Cloths wet in cold water, and changed every five minutes, give great relief, lessen the pulse and decrease the temperature. Mucilaginous drinks, light, nourishing diet, increasing the same as the inflammatory symptoms subside, should be given.

The remedies in the commencement should be taken frequently, from every half-hour to every two hours, according to the severity of the case.

PLEURISY.

The pleura is the membrane which invests the lungs and lines the chest, forming a partition that divides the cavity into two parts. Inflammation of the pleura, or pleurisy, is caused by a cold, or is the result of inflammation extending from the lungs. It commences with acute pain in the side, usually the right; the respiration is hurried and short, giving great pain, and, in many respects, the symptoms are similar to those attendant upon inflammation of the lungs, though the cough, which frequently occurs, is devoid of the bloody expectoration of pneumonia.

TREATMENT.—Aconite.—High fever and dry skin. Alternate with bryonia, if there be severe, stitching pain and dry, hacking cough. The helps used in the treatment of pneumonia will be applicable as well as the administration of the medicines.

WHOOPIING-COUGH.

This disease is generally confined to children, and derives its name from the peculiar sound produced by drawing in the breath during a fit of coughing. It is contagious in character, and usually occurs but once during life, though instances are known of people having a sympathetic cough resembling the disease, when in contact with those who are suffering from a real attack. It usually comes on with hoarseness, cough, difficult breathing, fever, and the ordinary symptoms of a cold. After ten or twelve days the coughing, attended with a shrill whoop, is fully established, and its paroxysms sometimes terminate in a fit of vomiting. Nose-bleeding is a frequent and sometimes troublesome symptom.

TREATMENT.—The disease runs a stated course, when left to itself,

but, under proper treatment, the severity of the symptoms are much lessened, and the length of the disease materially shortened. During the primary stage, aconite is usually all that is needed; but after the feature of whooping is established, the following are required: Drosera will be found excellent, the indications for which are violent, spasmodic, fatiguing cough, attended with whistling or whooping breathing, terminating with profuse expectoration or vomiting. A syrup of drosera may be given throughout the disease. Make it by mixing one drachm of the tincture of drosera with three ounces of simple syrup, and give a half-teaspoonful three or four times a day. Give belladonna, when the cough is worse at night, harsh and accompanied with soreness of the throat. Cuprum is needed when convulsions occur, followed by loss of consciousness.

No animal food should be allowed until after the patient has begun to improve. Vegetables, sago, tapioca, bread, gruel, light puddings and fruit may be allowed.

SPASMODIC CROUP.—ASTHMA MILLARS.

This is an affection of the throat, and consists in a temporary closing of the fissure of the glottis, or entrance to the windpipe. It is frequently mistaken for true or membranous croup, but it has two distinguishing features: It is not ushered in with a cold, and has no membranous formation. It attacks children suddenly, usually in the middle of the night, the child waking with a shrill, hoarse cough, great anxiety and apparent suffocation. A characteristic in this disease, however, is that the difficulty in breathing is in the inspiration, or drawing in of the breath, with free and easy expulsion. It is not dangerous, unless long neglected, and usually yields to treatment.

TREATMENT. —Apply a compress wet in cold water to the chest and throat, covering thickly with flannel. If there is fever, give a dose of aconite. Gelseminum is indicated by alternate spasm and relaxation. When there is a paralytic or chronic condition, a two-hundredth of a grain of strychnine once or twice daily is useful.

ASTHMA.

The prominent symptoms of this curious disease are difficult breathing, with distressing sense of suffocation; fullness and oppression of the chest; anxiety. It comes on in paroxysms, and sometimes is dry, without expectoration; at other times, moist, with profuse discharge. The latter condition, however, is indicative of a relief of the attack, and when the cough has been dry and hard at first, the expectoration may be tinged with blood. The attacks are usually preceded by languor, heaviness of the eyes, and general

depression, with sickness and restlessness. They are usually worse at night, and often keep the patient from lying down.

TREATMENT.—Ipecac.—When aroused from sleep by a sense of drawing or cramping in the lungs; pale face; cold extremities; muscles rigid; evidences of suffocation; congestive headache; sickness. Arsenicum, when, in addition to the above symptoms, there are great exhaustion, cold perspiration, burning sensation in the throat, and cramping in the extremities. Aconite, in spasmodic asthma, the special indications for it being oppressive anxiety; difficult breathing; labored action of the heart. Nux vomica has extraordinary efficacy in this troublesome complaint, owing to its action on the digestive tract, an irritation of which is one of the primary causes of bronchial spasms. It is especially adapted to the condition of the digestive organs following a paroxysm. The symptoms indicating its use are thick, yellow fur on the tongue; nausea; flatulence; constipation.

During a fit, striking relief is often obtained by putting the feet and hands in hot water. Smoking leaves of stramonium, the common thorn-apple, at the commencement of an attack, acts like a charm. This is sometimes combined with nitrate potassa (saltpetre), and burned in the room in the form of powder on hot coals. This does not always prove efficacious, some getting no relief. The breathing of aconite vapor is often much better, a few drops of the tincture being put into boiling water.

Persons subject to this disease should restrict the diet, rejecting all articles of food which are indigestible, and avoid damp clothes and sudden changes in temperature. Inclination to stooping, a habit common to all asthmatics, should be corrected, and the capacity of the chest be increased by expansion and systematic breathing, filling the chest full of air. The application of cold water to the body, by means of the shower-bath, will fortify the patient against cold, and strengthen the whole system. Outdoor exercise should be taken, though time should be allowed after a meal for food to digest.

HAY-FEVER.—HAY-ASTHMA.

This disease consists in an irritation of the air-passages, and is due to the inhalation of some exciting substances, usually the pollen of certain flowers or grasses. It passes under the names above given because of this generally accepted origin and its periodic appearance at a certain time in the year. Back of this, however, there must be an idiosyncrasy, resulting from some form of nervous exhaustion (see Nervous Exhaustion), against these irritating agencies; for all of these combined would not produce hay-fever unless the system were previously prepared for its development by some nervous condition. Though properly an affection of the nervous sys-

tem, it is treated in this chapter because it manifests itself especially in the organs of respiration.

The symptoms are those of ordinary catarrh, with or without asthma. There will be itching of the nose, eyes and ears; frequent sneezing, often in prolonged paroxysms; profuse discharges from the eyes and nose, causing irritation and soreness about them; tightness in the chest, with cough and difficult breathing; pricking in the throat; general lassitude; fever often followed by chills, these sometimes being of the periodic type characteristic of ague; spirits liable to be much depressed, with great irritability of temper; all symptoms worse at a certain hour of the day.

TREATMENT.—This consists in the correction of the condition of the nervous system which invites the disorder, and an avoidance of all those irritating substances in the atmosphere which are known or suspected as the exciting cause. To gain these ends, one must often seek needed rest from the ordinary cares of his avocation, choosing a locality free from the atmospheric conditions which favor the disease; and anticipating an attack by making such change before it comes on, for the malady is with difficulty checked after its symptoms have once fairly set in. There is such a variety of conditions, causes and symptoms that each case must be studied and treated independently; hence, the advertised "cure-alls" can be safely set down as worthless, and some are known to be positively harmful.

For the sneezing, titillation of the nose and irritation of the eyes, particularly when the discharges excoriate the surrounding skin, arsenicum iodide will be found the most useful. It may be used as a preventive, its administration being begun some time before the attack. Ambrosia is equally efficacious when there is great difficulty in breathing; as are also *grindelia robusta* and *sumbul*, or vegetable musk. *Sabadilla* has cured many cases; in addition to its use as an internal remedy, it should be applied by inhalation. Bromide of potassa and bromide of soda often give prompt relief by allaying the nervous irritation which is the basis of the trouble. *Kali bichromicum* relieves cases which are attended by much cough, yellow-coated tongue, and general derangement of the digestive functions. *Quinia* has often afforded relief when there seemed to be malarial complications, one or two grains being given every two hours during the intervals between the paroxysms.

[I have cured more cases with iodide of arsenic (one-hundredth of a grain every two hours) than with any other medicine. A severe and sudden attack may often be cut short by taking twenty grains of chloral hydrate.—HALE.]

The inhalation of medicines often proves very beneficial, the patient many times securing sleep by such means when others have failed. For

this, an ordinary inhaler may be used, or a spray atomizer. Fifteen drops of fluid hydrastia in an inhaler one-third full of water may be used two or three times a day, the vapor being drawn into the air-passages; the same directions being also applicable to an atomizer. Ten drops of a twenty per cent. solution of carbolic acid, in place of the hydrastia, make a good preparation for use in the inhaler or atomizer; so also do twenty drops of the tincture of sabadilla.

The symptoms are mitigated by protection from strong, bright sunlight, and the use of such means as will promote the vigor of the system and the circulation. The cold or tepid bath, Turkish bath, and sea-bathing may prove of benefit, the condition of the patient being carefully considered in their application.

INFLUENZA.

This rather frequent disorder is not confined to any particular country or clime, though it prevails more generally in the temperate zone. It is epidemic and non-contagious, though there may be conditions under which it will become infectious. There is no doubt, however, that it is due to atmospheric conditions. The name influenza means "influence," and was applied to this disease from the fact that during one of the great epidemics of the seventeenth century the cause was supposed to be the position and influence of the stars. It seems to travel with an east wind, and sometimes extends a long distance. Its duration in one locality is usually from four to six weeks, and its departure is as sudden as its approach. Being epidemic in character, and attacking both man and beast, old and young, it is often of a formidable nature, and sometimes fatal, especially in the aged or very young.

It differs from a common cold in its sudden appearance and epidemic nature; in not being connected with any sudden extremes of temperature; in the severe fever, general prostration, and nervous depression which attend it; in the longer duration of its symptoms and subsequent effects. It usually comes on with chilliness, particularly in the back; pain in the limbs and back; fever; severe headache, affecting the forehead and eyes; violent fits of coughing and sneezing; watery, inflamed eyes; thin, acrid, excoriating discharge from the nose; nausea, and loss of appetite; sometimes vomiting; much thirst. Though it is a specific fever of a catarrhal type, it is not confined to the respiratory organs; but it usually manifests itself particularly in these parts, involving the whole tract and producing the symptoms of coryza, laryngitis and bronchitis. Its duration in a given patient is from four to ten days, the latter period being nearer the rule in severe epidemics.

TREATMENT.—Confinement to the house is requisite, and sometimes to the bed also. The diet should be light, consisting of gruels, except when there is great prostration, the latter condition demanding strong animal broths. The room should be kept warm and well ventilated, the patient being studiously protected from draughts.

When the attack first appears, as indicated by chilliness, bromide of camphor will often arrest its further progress. Gelseminum is the best remedy for the fever, and should always be given unless the fever is of a pronounced inflammatory type; the latter condition needs aconite. The indications for gelseminum are severe aching; alternate chills and fever; headache; moist skin; dry cough; symptoms worse in the after part of the day. Aconite is indicated by a quick, hard, full pulse; dry, hot skin; harsh, dry, painful cough; pain in the chest. When the discharge from the nose begins, and makes the lips, nostrils and eyes sore, arsenicum iodide should be given. Kali bichromicum acts well if there be much cough, with sticky, tenacious mucus; yellow coating on the tongue; disturbance of the stomach. Nux vomica, for stuffy feeling in the nose; dull headache; constipation; indigestion; bitter taste in the mouth. Cases which take on a marked periodical type, with chills followed by fever, will be best met with quinine, one to two grain doses every two or three hours during the interval between the fever and the subsequent chill. Iron in some form may be required to build up the system when exhaustion and debility continue after the disease has subsided. Elixir nitrogenized iron is a good form.

Inhalations may afford grateful relief, and suitable directions for their use may be found in the article on Hay-Fever. Cold baths have a good effect, if wisely applied, and, when used before an attack, will often prevent its appearance by promoting the vigor of the body and thus rendering it less susceptible to atmospheric influences. There is little doubt that a debilitated, overworked, or poorly-nourished body is well suited to invite this disease.

SPITTING BLOOD.

This difficulty, though usually an accompaniment of some disease of the lungs or bronchi, sometimes occurs independently as the result of effusion of blood through the membrane lining these organs, and may not be a very serious condition. The blood from the lungs is frothy, of a light-red color and thin, and bleeding from these organs is attended with cough, the blood having a sweetish or salty taste; while that from the stomach is dark, and unaccompanied by cough. (Study the characteristics of the two kinds of bleeding that are given under "Vomiting of Blood," in Chap. IV.)

An attack of bleeding is usually preceded by a sensation of tightness

or oppression of the chest; difficult breathing; anxiety; palpitation; burning sensation in the chest; lassitude; a rapid pulse. In those predisposed to this trouble it may be caused by any violent exertion, or by a debilitated or faulty circulation of blood through the lungs. It is usually an indication of disease of these organs or bronchi.

TREATMENT.—Aconite or arnica, alone or in alternation, will usually control the bleeding. Give china or pulsatilla if there be, after the bleeding, an uncomfortable feeling in the chest; debility; difficult breathing, and chills. Hamamelis, ten to twenty drops, doses every half-hour or hour, if the bleeding is profuse. [Tincture of erigeron, ten drops every hour, will arrest almost any such bleeding.—HALE.]

Violent exertion and stimulants of every description should be avoided. A light, cool, vegetable diet is the best. While the bleeding continues, perfect quiet and silence are necessary, the patient being allowed cold drinks.

CONSUMPTION.

This disease, so prevalent and so fatal in our variable climate, though well known to the ordinary observer, does not belong to the province of domestic practice. Its incurability, after reaching a certain stage, and the insidious manner in which it makes its approach, call for the best medical aid in the beginning. Though incurable when it is far advanced, it is often relieved in the early stages, and a new lease of life granted.

The first indications of its approach are the gradual but persistent loss of flesh, which may be noticed some time before there is cough or expectoration. This is undoubtedly due to the failure of the digestive organs, or the process of assimilation of food. Soon there will be debility, shortness of breath on making any exertion, oppression of the chest, and finally, cough and fever. This fever is peculiar, making its appearance quite regularly each day, generally about noon, continuing for a few hours, and followed, as the patient grows weaker, by drenching sweats. As the disease advances, all the symptoms increase, the cough becomes hoarse, and the expectoration changes from a clear, transparent mucus to an opaque, viscid fluid, greenish, and sometimes tinged with blood. The fever becomes more severe, continuing for several hours; there is a burning heat on the palms of the hands and soles of the feet; a red spot appears on one or both cheeks; the emaciation is great; the eyes are large and bright; the patient, ever hopeful, ever looking to a speedy return of health, gradually declines.

The causes of this malady are many. It follows diseases which result in a reduced state of the system. It may result from neglected colds or catarrh; in fact, very many cases are due to repeated attacks of

catarrh, and the warning to *never neglect a cold* can not be too urgent. Contagion is another source of consumption, and may be imparted by sleeping with one who is suffering from the disease, or in the same room with him, by drinking from the same cup, and the like. Hereditary and other taints are often its cause; and also, to use Bennett's words, "impoverished nutrition, resulting from impure air, and an improper quantity, quality, or assimilation of food; and so long as misery and poverty exist on the one hand, or dissipation and enervating luxuries on the other, so long will the causes be in operation which induce this terrible disease." Foreign material in the lungs, as the dust from coal, iron or slate, will also give rise to consumption. Tubercular matter may form in the air-cells, degenerate, form pus, and so promote the disease. Tubercular matter, let it be known, may exist in the lungs for some time before any obvious symptoms indicate the presence of consumption. The increase of the temperature of the body during this state is, however, so persistent that high authorities affirm that a prolonged and continuous rise of temperature is a certain evidence of a deposit of matter in the lungs, though there may be no other symptoms that point to disease. The presence of this matter may be determined by placing the ear over the lungs and detecting a rattling sound during respiration, or by examining the expectoration and observing that it consists of pus which appears in globular, wool-like masses, sinks in water or floats at different depths, and when put on a dry surface assumes the form of flat circular bodies which remain distinct from one another.

The course of the disease is quite variable, sometimes galloping along and hurrying the patient to the grave in a few weeks; at other times lasting for months or years, with alternate hope and fear, until the worn and tired body sinks away.

TREATMENT.—The treatment, except in the earliest stages, consists in palliation, and we shall endeavor to place before our readers those means whose careful study may result in prolonging life, and relieving its last days of many pangs. In the early stages we must be mainly guided by the special cause of the disease. When this is catarrh or cold, the patient is referred to the article on that subject; when due to exhausting disease or debility of the digestive function, attention should be given to treatment of the disorders in its organs, as described in the chapter upon the digestive system.

Aconite is one of the best remedies for the fever accompanying this disease. Its special indications are hectic fever; full pulse; dry cough; bleeding in full, fleshy people. After the first stages of cough have passed, and there is a hoarse, rattling cough, no better remedy can be found than *hepar*. It is beneficial for disposition to take cold, profuse sweats, especially

about the chest, with a sour smell; coughs when uncovered; hoarse, croupy cough; catarrh of the throat and windpipe, with great hoarseness. This remedy will be found very useful when there is an unhealthy condition of the skin, causing it to crack and chap and to run into ulcerations from slight causes, as salt-rheum and other eruptions. Sulphur is useful in the incipient stage; also for hoarseness; difficult breathing; weakness and burning in the chest; and, later, for the stage of pus-discharge from the lungs. Give *calcareo carbonica* for violent cough, hoarse in the evening; expectoration composed of pus and of a foul smell; great prostration, with profuse night-sweats; thirst; enlarged glands; indigestion. Phosphorus, in its many forms, has great power over this disease, and undoubtedly many preparations which have secured more or less commendation, owe their reputation to its presence. It is specially valuable for people of slender form and fair complexion, when the disease is deeply seated, with great emaciation, nervous prostration and more or less derangement of the digestive organs. There may be a reduced amount and quality of the blood, with frequent tendency to bleeding, a condition which is accompanied with a dry, hard cough, and expectoration frequently tinged with blood. This debilitated condition of the blood, with the general prostration of the system, tends to frequent attacks of watery, exhaustive diarrhœa, with more or less irritation of the stomach, at times causing nausea and vomiting. Such a state calls for phosphorus. So, also, does the dry, hoarse cough during the incipient stage, especially if there is a bloodless condition of the system.

Inhalations are often a useful method of administering medicines, but should be under the care of a physician, with the exception of the simple inhalation of the vapor from hot water, which soothes the inflamed mucous membrane, and assists in detaching the mucus from the air-passages.

It will be impossible to give the general treatment of consumption in detail within the limits of this work, for that would involve a thorough treatise on hygiene. We shall give the most important points in its prevention, cure and palliation. The first thing in importance, both in its prevention and the subsequent stages, is the diet. This should consist of food which is nourishing, digestible and of sufficient quantity, including animal food two or three times a day; good home-made, stale bread; puddings of arrowroot, rice, sago, tapioca and manioc, with milk; various kinds of green vegetables and mealy potatoes; milk; eggs, raw, or beaten up with milk or wine. Pork, veal, fish not having scales, pastry, and, in fact, all articles that are known to give rise to indigestion, should be avoided.

Cod-liver oil, although possessing many medicinal properties, must be considered as exerting its most important function as a food, and, if properly administered, may be productive of the happiest results. This is not always

the case, however, as it is frequently given at an improper time or to people who should not take it. The great benefits from its use lying in its recuperative properties, it should be given *only when the digestive organs are in a condition to utilize it* and furnish to the system the needed material to supply the great waste constantly going on. As a rule, patients of a scrofulous temperament should not use this oil. Care should be taken to make it as palatable as possible; to secure pure oil, which is always a clear amber in color; to furnish to the sensitive stomach some means to disguise its taste, and always to give it after eating, either in a little brandy, a tablespoonful of strong black tea, or without anything, if desired. The usual dose for an adult is one to two teaspoonfuls three times a day. There are various emulsions of the oil which are united with the phosphates, hypophosphites, or iron; but it is deemed best to prescribe none of these here as the best, for improvements are constantly made, and the reader will do better to make a selection upon the advice of some well qualified counsel. While using the oil, a plain, nutritious diet is necessary.

[A substitute for cod-liver oil has lately been introduced. It is the oil of the seeds of the saw palmetto. The oil is mixed with sugar and taken in doses of one-half to one teaspoonful three times a day. It will arrest the coughs, night sweats and emaciation, and rapidly increase the bodily weight. My experience with it has been very good.—HALE.]

Koumiss, which originated with the Tartars, and by them was made from mare's milk, is undoubtedly the best food that can be given, both in the stage when the digestive functions are impaired, and also when it is with difficulty that the food is retained or properly digested. The great success attending the use of this simple remedy is such that the people of Tartary are almost exempt from scrofula and consumption, and people from all Europe go into that country to submit themselves to treatment by koumiss, many returning in perfect health. These results have attracted the attention of the government of Russia, and institutions under government support have been established in different parts of the empire for its manufacture. With all our progress in this country, its preparation is limited to a few places, and the knowledge of its virtues is comparatively limited in the profession. Fermenting milk is the most easily digested food known, and this is true to such an extent that children, who are suffering from marasmus and unable to retain even the mother's milk, have been saved and made to thrive on koumiss. It should be taken the same as any other food, and, in the case of infants, may be diluted and sweetened with a little sugar. The relish for it increases with its use, until the patient prefers it to any other drink.

In all cases of delicate stomachs, it should be secured from a competent

chemist, but for other cases, a very fair article can be made by any one possessing a good supply of fresh, sweet milk, and a proper place to preserve it. To make it, take

- 1 Bottle old koumiss.
- 5 Quarts new milk.
- 1 Quart water.
- $\frac{1}{2}$ Pound loaf sugar.
- 1 Tablespoonful brewer's yeast.

Dissolve the sugar in the water and add the milk, then the koumiss, and then the yeast; stir all together in an earthen jar and place in a temperature of 70° to 75° F. When fermentation has been thoroughly established (which will be indicated by the surface being thickly covered with bubbles), put into strong bottles and thoroughly cork, tying the corks firmly. After this, place the bottles on the side in a temperature of 40° to 50° F., and in twenty-four or forty-eight hours it is ready for use. The only way in which it can be successfully drawn from the bottles is by using a champagne faucet. By this means, it will remain sparkling until all is used, and there is no danger of wasting it. Shake the bottle if there should be any lumps preventing its free egress from the faucet.

The extract of malt is highly recommended as a very nutritious tonic, and there are many preparations of it which will prove beneficial in the treatment of this disease and others of a kindred nature. Trommer's Extract is the best at the present writing, and, combined with cod-liver oil, or pepsin, makes a desirable and efficacious remedy. It should be taken three times a day, a tablespoonful for an adult, half the quantity for a child.

Hypophosphites.—The syrup, or solution, of hypophosphites of lime and soda, after the formula of the celebrated Dr. Churchill, has met with grand results in the treatment of consumption, scrofula, and other exhausting diseases. Its use, however, should be under the observation of skilled aid and great care should be exercised in the amount taken, since harm has resulted from drenching the system with too large a quantity. The dose for an adult is one to three teaspoonfuls each day, children a less quantity according to age.

Clothing.—Special attention should be given to the clothing, as consumptive people are very susceptible to changes in the temperature, and are liable to take cold. Underclothing of flannel, lamb's-wool or silk should be worn the year round, care being taken in the summer that it is not too warm, as it may cause much perspiration. In the winter, the addition of a vest made from chamois-skin may be worn outside the flannel. Too much care cannot be taken to prevent exposure to extreme cold, and those who are predisposed to or suffering from this disease should always be prepared

for any emergency or condition of the weather, as many have found early graves from the shock of a severe cold.

Bathing and Rubbing.—Before the patient has become exhausted, bathing of the body in cool salt-water is highly beneficial, sea-bathing being preferable. Great care should be taken to rub the body thoroughly with coarse towels until the surface is in a bright glow. This promotes capillary circulation, brings the blood to the surface, and strengthens and invigorates the body. If reaction does not take place, and the patient remains cold and pale, the warm salt-water bath, or the free rubbing of the body with the flesh brush, bath-sheet, or, what is still better, with "salt-towels," should be used. These salt-towels consist of an ordinary crash towel, saturated with a solution of sea-salt and water, and then dried.

Exercise.—Among the means of lengthening life, and the aids in the cure of this disease, are persistent exercise of the muscles and the free expansion of the lungs. The more fully the lungs are used and made to secure large quantities of pure, fresh air, the greater their capacity becomes. Under a judicious system of training, an undeveloped body, though feeble, narrow-chested and sickly, may become active, full-chested, and healthy. Systematic breathing consists in drawing the shoulders back, keeping the body erect and the head raised, while the chest is expanded to the fullest capacity in regular, long and deep inspirations, followed by complete and forcible expulsion of the air from the lungs. By this means the deep-seated cells are emptied, and new life-giving air is drawn in. The various gymnastic exercises, walking, horseback riding, and like practices, care being taken to stop short of absolute fatigue, will tend to build up a healthy body as a bulwark against this formidable foe.

In conclusion, the antecedent treatment, meeting the disease before it has been able to gain a firm footing, is the best and only sure means of success. This can be done only by avoiding all excesses, leading pure, sober lives, being hopeful, and, as far as possible, making one's every-day duties harmonize with the rules whose observance tends to strengthen and build up a healthy body.



CHAPTER VII.

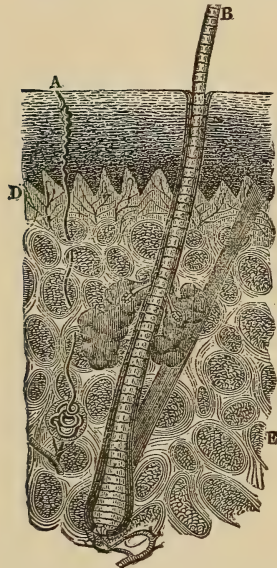
THE SKIN.

ANATOMY AND PHYSIOLOGY.

THE skin forms a thin but strong and elastic covering for the whole body. It is firmly joined to the underlying flesh, and, when viewed under the microscope, is seen to be composed of a multitude of little cells and fibers. It has two layers, known as the cuticle, or scarf-skin, and the true skin, a brief study of which will reveal an interesting and somewhat complex structure.

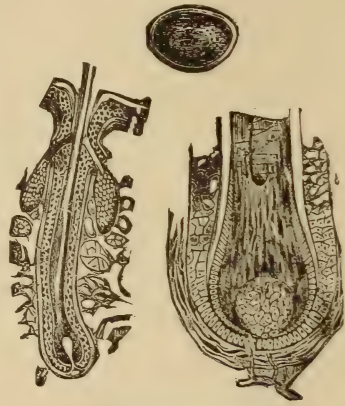
The scarf-skin consists of innumerable scales, visible when sufficiently magnified, which are simply rounded

cells that are flattened as they reach the surface. These cells are not more than 1-25000 of an inch in diameter. They are subject to constant waste and renewal, like other portions of the body, and are cast off in the form of dry, branny scales. This layer of the skin



40. MAGNIFIED SECTION OF THE SKIN.

C, Cuticle. D, Papillae. E, Fat-Cells of the True Skin. A, a Pore, Sweat-Tube, and coiled Sweat-Gland. B, a Hair, with two Oil-Glands, and with a Muscle attached to the root.



41. THE ROOT OF A HAIR.

In figure *a*, layers of the Skin are indicated by 1, 2, 3. 4, An Oil-Gland. 5, The Hair-Sac. *b* is the lower part of *a* more magnified. *c*, is a Vertical Section of a Hair.

has no blood-vessels or nerves of its own, and no sense of touch. Its deeper part, where it unites with the under layer, is called the *rete mucosum* and contains the pigment which gives the black,

copper and other colors to the different races. This coloring matter is less abundant in the white races, and is nearly or entirely absent in the albinos.

The true skin is composed of cells, nerves, blood-vessels, lymph-vessels and glands, and is very sensitive. At its place of union with the scarf-skin are little projections, called *papillæ*, in which the nerves of touch end. Deeper down, at the bottom of the true skin, are oil-cells, or sebaceous glands, which constitute what we call fat and serve as a protective padding against external harm or cold. These glands generally terminate in the tubes from which the hair grows. In addition to nourishing the hair with the oily substance which they extract from the blood, they lubricate the scarf-skin, prevent it from drying and scaling off too rapidly, and keep the skin soft.

Over the whole surface of the body are what are popularly known as "pores." These are little tubes which are closed at the deeper end, and terminate at the other end in tubes coiled into bundles, called sweat-glands. It has been estimated that there are more than twenty-eight hundred of these to the square inch, or seven million in an average-sized man, equivalent to twenty-eight miles of the tubing. It is evident that an enormous amount of fluids can be filtered off from the blood by the extensive surface of these tubes.

FUNCTIONS OF THE SKIN.

1. The skin forms a protective and supporting cover for the whole surface of the body.

2. It is the seat of the sense of touch, the nerves of that sense being very copiously distributed in it.

3. It possesses the power of absorbing matters brought into contact with it, with more or less activity according to the nature of the substance and the condition of the skin. The true skin will absorb very rapidly and indiscriminately.

4. It is an aid to the lungs, taking in oxygen from the air and giving out a small portion of carbonic acid, with a great deal of the vapor of water. Compare the functions of breathing in the anatomy and physiology of Chapter VI.

5. It is a great regulator of the temperature of the body.

6. It is one of the main channels for the purification of the body, by throwing off the used-up or waste materials, the accumulation of which in the system is followed by most injurious results.

From foregoing remarks the reader has learned that the skin is a most important part of his organism, and that a derangement of its functions must bring serious consequences. Between it and the internal organs there

is an intimate relation and the health of the body is dependent, in great measure, upon the maintenance of their uninterrupted intercourse. Diseases of the skin, indeed, are generally indications of some internal disorder, which is aggravated when measures are taken to suppress these outward manifestations without a corresponding treatment of the internal. Suddenly receding eruptions have brought on liver complaint, vomiting, affections of the eyes, diarrhœa, mania, consumption, and a variety of other troubles. Hence, the study of the skin and its care is of the greatest moment, and some of the diseases arising from its neglect are of the gravest import. For more specific observations upon its care, the reader is referred to that subject in the chapter devoted to Hygiene.

DANDRUFF OR DANDRIFF.

This disorder often results from acne, and may also be due to a derangement in the oil-glands of the skin. It may be a symptom of derangement of the digestion, nervous system, or other parts. Baldness will sooner or later result from this affection, and the latter should, therefore, never be neglected.

TREATMENT.—If the disorder arises from any of the derangements mentioned above, it will be effectually treated only by the removal of the main trouble. In such cases, while attending to the general health, and in cases independent of these constitutional ailments, wash the scalp with cold water and good mild soap once or twice a week; then apply equal parts of castor oil and alcohol, rubbed (not scratched) into the roots of the hair. A drachm of tannin to an ounce of vaseline is also good for an application every two or three days. Another is made of a grain of red oxide of mercury to a drachm of vaseline, care being taken not to use it so often as to keep the scalp irritated. A dose of arsenicum internally three times a day will be beneficial; if it does not afford relief, try graphites or lycopodium. A harsh brush should never be used, even on a healthy scalp. It is injurious to scratch the head when dandruff exists, or to use a brush or fine comb for removing it.

FRECKLES AND SUNBURN.

These are obviously annoyances rather than diseases. They are prevented by protection from the air and sun, though the reader should remember that such protection is often at the expense of the general health. To remove freckles, bathe the parts at night in a lotion made of six ounces of water, one teaspoonful of powdered borax, and an ounce of lemon-juice. Another application is composed of four ounces of vinegar or buttermilk,

and an ounce of grated horseradish root, to be used after standing some hours. For sunburn, anoint the skin with fresh lard or cream to remove the pain and irritation; if desired, the skin may, when tenderness is gone, be bleached with a very weak dilution of carbolic acid, or by bathing in water and carbolic soap.

EXCESSIVE AND OFFENSIVE SWEATS.

The sweat-glands sometimes give out an abnormal amount of secretions, particularly on the hands and feet, in the armpits and between the thighs. This not only occasions annoyance and debility, but is sometimes attended with an offensive odor; the latter condition also existing when the perspiration is not excessive.

TREATMENT.—For excessive sweats, promote the general tone of the system by proper food, drink and exercise, observing the directions on the care of the skin given in the chapter on Hygiene. For offensive feet, give a bath night and morning in alternate hot and cold water, the feet being first dipped into the hot water, then into the cold, every minute for fifteen minutes; then dry them and apply a solution of tannin and glycerine, two drachms of the former to an ounce of the latter. A strong decoction of white-oak bark is another good application after the bath.

An excellent treatment, along with the hot and cold water baths, consists in changing the stockings twice daily, and putting the feet of those taken off into a jar containing a solution of boracic acid for a short time, and then drying them before using again. The leather of the boots and shoes will, however, smell as offensively as the stockings. Obviate this by procuring a half-dozen pairs of cork soles and using a fresh pair every day, keeping them at night in the solution of boracic acid. The difficulty may also be remedied by bathing the soles of the feet once or twice daily in chloral hydrate, twenty grains to three ounces of alcohol, putting on the stockings while the feet are thus wet. Cloth boots and shoes are better for use, since they admit the air and allow the secretions to pass off; and rubbers, or other coverings for the feet that are very close, should not be used, or be worn only when out of doors in the wet or cold.

[The most successful treatment I ever adopted is to apply freely to the feet, after washing, the subnitrate of bismuth.—HALE.]

For offensive sweats on any portion of the body, bathe the parts two or three times a day with soap and water, adding a little chlorinated soda. The chloral hydrate recommended for offensive feet is also good. In place of the chlorinated soda in the bath, a little three per cent. solution of carbolic acid may be substituted. If one will use a good article of carbolic soap in the bath, he will have favorable results.

Offensive odors are sometimes due to the cottons or flannels worn, the coloring or fulling matters perhaps being such that the natural heat and moisture of the body will act upon them so as to excite a disagreeable smell. The chemicals, soap and starch used in laundries may also produce a like effect. One should, when he thinks he is suddenly annoyed with offensive sweats, examine the clothing to see if it is not the seat of the trouble.

SCABIES.—ITCH.

Common itch is caused by a parasite that burrows in the skin, forming canals in which it lays eggs that are usually hatched in eight or ten days. The young, as soon as liberated, begin burrowing, thus spreading the trouble very rapidly, so that in five or six weeks the greater part of the body may be covered. Along the canals are formed blisters, which finally break on the surface, the contents forming small scabs. Intense itching is the most prominent symptom, and is usually worse at night.

TREATMENT.—Sulphur, given internally, accompanied with sulphur-ointment applied locally, will generally cure the disease in three or four days. The ointment should be made of one part of sulphur to eight parts of lard, well mixed. The patient should take a hot soap and water bath at night, then rub the ointment thoroughly into the skin where affected, over the entire body if general, letting it remain until morning, when the hot bath should be repeated. The anointing should be repeated in the same manner until all itching disappears, the patient using great pains to avoid taking cold.

BARBER'S ITCH.—SYCOSIS.

Barber's itch is exclusively a disease of the male sex, occurring at about the age of twenty-five years, or when the beard grows thick and harsh. It consists in small elevations of the size of a pin-head, pierced by the hair or beard. These become filled with a thick, yellow fluid, and finally break, allowing the liquids to form the crusts. There is considerable swelling of the skin, attended with pain and heat. The disease is generally very obstinate. It is nearly always confined to the part of the face covered by the beard, but, in extreme cases, may extend to the scalp. It is transmitted from one person to another in shaving, by the use of the razor, mug, brush or soap.

TREATMENT.—As the disease is due to a parasite, the local treatment should be a remedy for killing the intruders, applied two or three times a day, the single hairs extending through the tubercles being all pulled out. Mercurius corrosivus, one or two grains to a half-ounce each of alcohol and

water, forms one of the best applications. Sulphurous acid, of twenty per cent. strength, as a lotion, will do better when the skin is highly inflamed and very irritable. Chrysophanic ointment will also prove useful. Internally, kali bichromicum may be used successfully, or red precipitate of mercury; but the local treatment generally gives the most satisfactory results.

ECZEMA.—SCALD HEAD.

This malady belongs to the class of skin diseases known as vesicular, characterized by an effusion of clear fluid underneath the cuticle, causing small elevations. These minute vesicles form in irregular patches, often running together, and, as they mature, the clear fluid becomes cloudy, the vesicles "gather and break," allowing the contents to form scabs of a yellowish-green color. In some cases, the exudation may ooze through the outer skin and not form vesicles, but spread over the surface, making a characteristic scab. Itching is a very prominent symptom.

Another form is salt-rheum. When found in the face or head it is often called milk-crust. Grocer's itch, baker's itch, washerwoman's itch, etc., are only different forms of eczema, due to the irritants used by them in their employments.

TREATMENT.—Owing to the fact that poor assimilation and faulty nervous action are great causes of eczema, the food should be well guarded. Stimulating drinks should be strictly avoided, pork and pastry being omitted in the food.

The inflammatory symptoms are best allayed by wheat-bran mashes, two or three times per day, by poultices of boiled starch or linseed meal, or by hot fomentations. When but little inflammation exists, and the discharge is abundant, the loose scabs should be removed, and the parts dusted night and morning with lycopodium powder, or equal parts of oxide of zinc and starch. Glycerol tannin may be used with success, the formula for which is:

20 Grains of tannin.

1 Ounce of glycerine.

Mix.

When eczema becomes chronic, oil of cade, or pyroligneous oil of juniper should be used, one part of the oil to two parts of olive oil being well rubbed in night and morning.

Internal Remedies.—Graphites.—Thick crusts covering a raw surface; strong-scented serum; itching worse at night. Give sulphur when it attacks the scalp from ear to ear; surface bleeds easily. Aconite is useful in simple forms, with feverish symptoms; acute cases. Give rhus for acute

eczema; small yellow blisters, with red margins; also itching at night, worse during wet weather.

[Great success has followed the use of the tincture of burdock-seeds, fifteen drops four times a day.—HALE.]

ACNE.

Acne, or stone-pock, is an eruption consisting of hard, inflamed elevations on the skin, varying in size from a pin-head to a pea, and is due to a retention of the secretion in the oil-glands. The elevations generally suppurate and gradually disappear in two or three days, while others are in various stages of formation.

This disease is usually confined to the face, shoulders and back, and occurs more commonly at or soon after puberty; men of sedentary habits and drunkards are subject to it. In women, it is often connected with uterine disturbances.

TREATMENT.—The diet should be light, all spiced or salt food and stimulating drinks being avoided. Antimonium tartaricum may be given internally and applied locally when there is great tendency to formation of pus. Belladonna, when the pimples are large and bright-red, especially in young, full-blooded people. Give kali iodidum when the eruption is general, and very sensitive, especially at night. Sulphur is needed in chronic cases. Phosphoric acid, for cases due to menstrual troubles, and when it accompanies puberty in either sex [or pulsatilla.—HALE.].

COLD SORE.—FEVER BLISTER.—HERPES.

This is an inflammation of the skin resulting in vesicles or blisters. It is more often found on the face and about the lips than elsewhere. The blisters generally occur in clusters, and the surrounding skin is inflamed and angry in appearance. Bad feeling and slight fever generally signal the attack. About the third day the blisters usually either break or continue to dry up, leaving scabs which soon fall off. The disorder may appear during an attack of pneumonia, or at the crisis of fevers, or may be simply the result of cold or catarrh. Whatever be the cause, it often causes much pain, and always some annoyance.

TREATMENT.—Calendula jelly may be applied locally with a good effect. The internal remedies are: Aconite, when caused by taking cold; or at any time when there is much fever or restlessness; is preferable in early stages. Arsenicum album, when the disorder is accompanied with great burning, especially after scratching; red, angry-looking patches around the lips. Kali bichromicum, when herpes results from taking cold;

also for secretions and excretions of ropy, sticky character. *Natrum muriaticum*, when occurring during typhoid and other fevers.

CHAFING.—INTERTRIGO.

This affection is mostly confined to fat persons and infants whose skin is tender. It is usually found under the arms, on the neck, about the buttocks, or wherever the flesh lies in folds. The surface becomes raw, with considerable heat, causing great irritation to the patient.

TREATMENT.—Bathing, with cold water and castile soap, will relieve the irritation. After drying the parts, *lycopodium* powder with rice powder or starch, equal parts, should be dusted over the affected skin. Give *calcareo carbonica* when occurring in fat, scrofulous children. *Chamomilla* is indicated when the trouble is aggravated by change to cold in the weather; and if the child is sleepless and fretful. Give *mercurius* for rawness with great tenderness; symptoms worse at night.

[No other treatment equals the application of an ointment composed of five grains of boracic acid to one ounce of vaseline.—HALE.]

CHILBLAIN.

Chilblain is an inflammation of the skin caused by cold, and usually occurs in the hands and feet. It begins with very fine blisters, accompanied with intense itching, tingling, and burning. The skin is left tender and irritated, and cold or damp weather will bring on repeated attacks, so that, in chronic cases, it disappears in summer, and comes on in winter. In long-standing cases, ulcers may form, and be quite obstinate in healing.

TREATMENT.—*Belladonna* is to be given in recent attacks with considerable swelling and a bright-red color. Sulphur: Chilblain that itches intensely from warmth. *Arsenicum*: Ulcerated chilblain.

Local applications are of much service in most cases. *Calendula* tincture, one part to three of glycerine, applied to ulcers caused by chilblain, will give relief, and act as a curative; also, extract of *hamamelis*, one part to two of water, applied to chilblain when no ulceration exists.

[A lotion of one part of oil of turpentine to four parts of olive oil is often promptly curative.—HALE.]

WARTS.—VERMICA.

Although warts assume so many shapes and appearances, the treatment is pretty much the same.

TREATMENT.—This consists in direct removal. Usually, when large enough to get hold of, they may be taken off by means of the scissors or silk

ligature. Caution may be used. Mercurius corrosivus, two grains to a half ounce each of water and alcohol, or of water and tincture of thuja, applied two or three times a day, will sometimes remove them without resorting to the harsher methods. After cutting off the tops, one or two applications of carbolic acid will remove them. [The application of the chloride of ammonia has been found curative.—HALE.]

CORN.

A corn is usually a small, horny formation deeply seated in the skin, and painful on pressure. It is caused by ill-fitting shoes or boots.

TREATMENT.—Easily-fitting shoes or boots must be worn, in order to either give relief or effect a cure. The corn must be taken out, and this is best done after poulticing. Either the knife or a caustic may be used. If it is much inflamed or painful, a lotion of arnica tincture or tincture of veratrum viride, one part to ten of water, may be applied.

BUNION.

This is an inflammation of the large joint of the great or little toe, and is caused by the pressure of tight-fitting or narrow-toed shoes, which throw the toes together, one over the other, thus producing a sharp angle at the joint. It is attended with pain, redness and swelling, and if the cause continues, terminates in deformity of the foot, enlarging the joints by deposits which hold it permanently in this position. The discomfort attending it is so great that every means should be used to cure it in the start, for a bunion once formed is permanent, and inflammatory symptoms are liable to occur at any time.

TREATMENT.—To relieve the first inflammation and prevent the formation of a bunion, the exciting cause should be removed, the foot and toe be placed in as natural a position as possible, and a lotion of arnica be applied, one ounce of the tincture to four of water, or a lotion of veratrum viride, equal parts of the tincture and water. If pus forms, a poultice of linseed meal and poppy leaves may be applied.

BOIL.

So common is this disorder, and so varied and yet simple its general treatment, that little can be said with which all are not familiar. A boil is simply a circumscribed inflammation of the skin, usually resulting in supuration and the formation and expulsion of a "core." It is attended with severe pain, generally of a throbbing nature, and increasing in intensity

until the pus has formed and is discharged. Then all the symptoms of inflammation quickly subside.

TREATMENT.—Local applications often afford relief. A dilution of tincture of arnica, one part to five of water, applied to the boil during the first two or three days, reduces the inflammation. Hot poultices made of ground flaxseed and elm, tomatoes, or bread-and-milk, should be applied and continued until the "core" comes away, or the inflammation subsides.

Internal remedies, such as the following, may be given: Belladonna, in an early stage, if heat and pain are very great. In a later stage, arnica to promote healing and prevent recurrence. Hepar is indicated during the inflammation, to hasten suppuration. Silicea, for great disposition to have boils.

Narrow strips of adhesive plaster, drawn tightly over the swelling, tend to lessen the inflammation in an early stage.

FELON.—WHITLOW.

This is an inflammation of a thumb or finger which results in suppuration. It involves all the structure underlying the skin, and often results in the loss of one or more of the bones of the part affected. It has its origin in a bruise or other injury, implicates the membrane surrounding the bone, and is accompanied with the most excruciating pain, depriving the patient of sleep for days and nights together. This pain is throbbing and tensive in its character, oftentimes extending to the arm and shoulder, becoming more intense when the parts are hanging down, and never ceasing until the deposits of pus are discharged, or the death of the parts takes place. The last-named issue is often experienced, and there is loss of one or more of the joints. The swelling is usually very great, the whole hand and wrist being involved, with an appearance of erysipelas, and puffy, swollen skin. The pus forms deep in the sheaths of the muscles, or under the membrane that covers the bone, and, if allowed to burrow, may cause great destruction of the parts. The pain is so intense, and the inflammation so great, that severe constitutional symptoms often set in; the patient is feverish and unable to sleep, loses his appetite, suffers from aching in the head, back and limbs; the face is flushed; the pulse strong and tense; and oftentimes there is delirium.

Phlegmonous abscess, or frog-felon, is a form of inflammation closely resembling felon, which occasionally takes place in the palm of the hand. It is due to some external violence, such as using a tool to which the hand is unaccustomed. It is deep-seated, affecting the tissues underneath, or the sheaths of the tendons. As the inflammation progresses, all the parts be-

come involved, the swelling extending over a large surface, presenting a livid or dark-red color, and attended with intolerable pain for days. The fingers are involved and become greatly swollen, stiff and misshapen. This difficulty is often called frog-felon, but, while it resembles the felon in many of its characteristics and its constitutional disturbances, it differs from it in the extensive and phlegmonous character of the inflammation.

In both of these difficulties, though the direct cause of the inflammation seems to lie in an injury to the parts, there must be a depraved state of the constitution from a disordered condition of the secretions, especially those of the digestive tract. One prominent author expresses the belief that it is impossible for felon to occur in a sound constitution.

TREATMENT.—In the treatment of whitlow, or felon proper, the author just cited says that the great and indispensable remedy is the knife, early and freely used, the incision being long and deep, the edge of the instrument grating upon the bone. Suppuration is thus anticipated, and the structure saved. There is no doubt that this is good practice after pus has begun to form, or when the inflammation will not yield to other means; but until this point has been reached, the knife should not be used. Oftentimes the early use of applications named below will arrest the trouble, if accompanied with proper constitutional treatment.

In the cure of frog-felon, or inflammation of the palm of the hand, the knife should never be applied until such time as the skin alone covers the pus; for many times the repeated and indiscriminate use of the knife in these cases has resulted in injury and extensive deformity of the parts.

The first indication of the approach of a felon is a feeling as if a sliver or thorn had entered the flesh, accompanied with a stinging and pricking, followed by heat, throbbing and pain. Swelling and redness soon come on, and, as they increase, the pain becomes more intense until all rest is gone. When the first symptom appears, the feeling as of a thorn in the flesh, accompanied with soreness on firm pressure, the part affected should be covered with a layer of absorbent cotton saturated in the strong tincture of lobelia; this should be continued persistently until it entirely relieves the trouble. Few cases will fail to yield if taken before there is any deposit among the tissues. If this fails to give relief in a reasonable time, and the swelling continues, while the pain becomes more intense, the knife should be used freely, and the wound dressed with a lotion of calendula.

The above treatment will apply equally well to the abscess of the palm, except the use of the knife; instead of this, the various poultices may be used. Poultices may also be applied to a felon, if the patient objects to the more "heroic" but better use of the knife. For the various kinds of poultices, the reader is referred to the chapter on Nursing.

Ammonium carbonicum taken internally has arrested the inflammation and stopped the pain which deprived the patient of sleep. Arsenicum is needed when sloughing has taken place; when the parts look gangrenous, and burn like fire; and when there is great constitutional derangement. Give hepar for violent, throbbing pain; also serviceable for hastening suppuration when it has commenced. Silicea is useful for deep-seated inflammation; also after sloughing, if the parts are slow in healing.

When an incision is made for felon, the cut should be in the middle line of the finger, to avoid the arteries which run along the sides. The opening should also be made between, not over, the joints, and the knife should always be in the hands of a surgeon, if possible.

A good nourishing diet and everything which would tend to invigorate the constitution, as exercise and outdoor life, should be had.

ONYCHIA, INGROWING NAIL AND "RUN-ROUND."

A mild but distressing form of whitlow, known as "run-round," consists in an inflammation at the sides and root of the nail, which results in suppuration and sometimes loss of the nail. It is caused by cutting the nail too close, by a bruise or other mechanical injury, or by an ingrowing nail.

When pus forms, it should be let out as soon as possible. When caused by ingrowing nail, the nail causing the trouble should be allowed to grow out beyond the toe. Never cut the edge that grows into the flesh; pare the upper surface well, and make the center thin; soften the parts with warm water; raise the edge of the nail and keep it elevated by placing under it a small wedge of lint or cotton. When inflammation is severe and there is a tendency to formation of pus, apply poultices. [After paring the surface and trimming the center, make a V-shaped cut in the middle.—HALE.]

CARBUNCLE.

This distressing disorder consists in a circumscribed inflammation of the intermediate cellular tissue of the skin, and the fibers beneath. Its gravity depends largely on the size (which varies from one inch to six in diameter), and on the general condition of the constitution of the patient. Under any circumstances, it is of serious import, and as it often attacks people past middle life, and those with low recuperative powers from a broken-down or low state of the system, it should command attention in the start. Some idea can be formed of its fatal character, when accompanying exhausting diseases, from statistics of 1854, which show that there were nearly four hundred deaths from carbuncle in England alone.

The disorder commences with a circumscribed inflammation, varying

in size, with some burning pain and redness in the affected parts; more or less constitutional disturbance, as fever, headache, thirst, and foul tongue. As the disease progresses, the spot becomes hard and swollen, assuming a purplish hue, accompanied with a tense, pressing pain; the surface after a few days softens; pus forms and exudes through several small openings, which after a time join, and the whole mass sloughs out, leaving an ugly, slowly-healing ulcer. In some cases, if the destruction of tissue is extensive and the patient is very much reduced, it continues to break down, gangrene sets in, and the patient sinks rapidly from exhaustion and blood-poisoning.

The favorite locality for this disease is the nape of the neck and shoulders, though it is often found on the buttocks, forehead, and wrists. It is more prevalent in winter than in summer, and sometimes prevails to such an extent as to assume an epidemic tendency. The prevention of carbuncle, when threatened, is of the greatest importance, and if the means recommended below to accomplish this should prove ineffectual, they will have so modified the trouble as to greatly lessen its importance and danger.

TREATMENT.—As soon as there is evidence of trouble of this kind, cut straps of adhesive plaster, which is applied with heat, into strips varying in width according to the size of the swelling, but usually one-half inch, and long enough to reach from side to side, beyond the hardness felt under the skin; heat them well, attach at one side and draw firmly and evenly around the base of the swelling; so continue until the whole surface is covered, except a small spot at the apex half an inch or less in diameter. These straps should be removed every day and the surface of the carbuncle be bathed in warm water, new pieces being then applied. If such adhesive plaster is not procurable, a good quality of rubber plaster may be obtained, but it, of course, does not require heat in its application.

If pus has not already formed, this treatment will often dissipate the swelling without suppuration taking place. A carbuncle commences with an inflammation of the intermediate tissue, resulting in engorgement of the capillaries, impeded circulation therein, the destruction of the tissues, and formation of pus. The larger surface we have involved, or the more extensive the capillary engorgement, the greater will be the extent of disintegration. Any means, therefore, that will reduce the former will lessen or prevent the latter. When the straps are applied to the surface, the pressure exerted forces the blood out of the capillaries, relieves the engorgement, and stops the inflammation, thus narrowing down the surface involved. Many times, to the writer's certain knowledge, this has prevented the formation of the abscess, or has confined it to insignificant limits. This treatment should be continued, though pus may form and sloughing follow, to confine the diseased parts as much as possible. The space between the

plasters, at the apex of the swelling, may be covered with a cerate of phytolacca until the pus has reached the outside skin, at which stage an incision should be made to let out the pus. When the slough has come out, the ulcer should be cleansed and the edges be drawn as nearly together as possible, except a small opening for the escape of the secretions. In some cases, either from long standing or from a very low state of the system, the sloughing may be very extensive, and the ulcer may require a long time to heal by granulation. Such healing can be hastened by applying a lotion of chloride of zinc, a grain in an ounce of water; or one of calendula, one part of the tincture to two parts of water. Before their use, the ulcer should be cleansed with castile soap and water.

Aconite may be given internally to allay the fever which arises from the severe inflammation. Apis, when there is an erysipelatous inflammation which is disposed to spread. Arsenicum is especially adapted to the disorder, since it not only exerts a specific action on the local trouble, but also influences the constitutional condition which is the primary cause of the difficulty. The special symptomatic indications for its use are large, painful and malignant carbuncle; great prostration; small, quick pulse; excessive burning, as though the parts were covered with hot coals; signs of mortification; when the carbuncle is the result of contagion. Silicea is of service when sloughing is great and granulation is slow.

Since the disease is the result of a low state of the system, every means should be used to build up the blood and invigorate the body. To do this, a good nourishing diet, such as the conditions of the case will tolerate, should be used. Essence of beef, cod-liver oil, eggs, milk, koumiss, and Murdock's Liquid Food, may each and all be found of value. The last preparation mentioned in the list consists of the juices of fruits and meats, and is so combined as to be readily assimilated. It possesses wonderful properties in building up low states of the system. The use of water cannot be commended too highly in the prevention of this disease, and the skin of people suffering from a reduced system should be bathed frequently with cold water containing sea-salt, followed by brisk rubbing to promote free capillary circulation. Take exercise in the open air as much as is possible or prudent.

BED-SORES.

Bed-sores are the result of long-continued irritation of certain parts of the body by lying on them. They are not a disease in themselves, but are the accompaniment of low fevers, consumption, old age, or injuries, when the body has become very much emaciated and weakened.

TREATMENT.—This should consist largely in prevention, for when once

formed, they add much to the suffering and depletion of the patient, and are rarely relieved until he is comparatively restored to health. When patients are obliged to lie continually or a great deal in one position, the parts in contact with the bed should be examined daily, be bathed in tepid water and dried with a soft towel, being afterward rubbed gently with glycerine or vaseline cream. The clothing should be kept strictly clean, and if possible, the position of the patient should be changed so as to relieve the contact on the parts.

If redness and soreness take place, relieve the pressure on the sensitive spot with a padded cushion or air-pillow, so made as not to touch the affected part, a ring being the preferable form, so thick that when the body or sore member rests upon it, the sore will not be pressed through to the bed. It should be filled with hair, or inflated with air. If the sore has formed and the surface is broken, it should be protected by adhesive straps medicated with arnica or calendula, and be sponged daily with water and carbolic or thymol soap.

WEN AND WEEPING SINEW.

A wen is a little tumor on the face or scalp which results from an enlargement of a sebaceous gland. At first, the opening of the duct may be seen, and a little white, curdy matter may be pressed out. In a later stage, the duct becomes filled and the wen is a sac of sebaceous matter, varying from the size of a pea to that of a walnut, being flattened or hemispherical, movable, and attended with little or no pain. The treatment consists in a simple surgical removal, preferably by a physician.

A weeping sinew, sometimes improperly called a wen, is a tumor in the sheath of a tendon, more commonly on the back of the wrist or upper part of the foot. It varies from the size of a pea to that of a hen's egg, and always contains fluid. The treatment consists in a sharp blow with a book or other hard instrument, the earlier applied the better. Should this fail, visit a physician. After the treatment, wear a compress for some time. Those who are subject to the disorder in the wrist should wear a webbing or rubber band around the wrist to relieve the tendons.

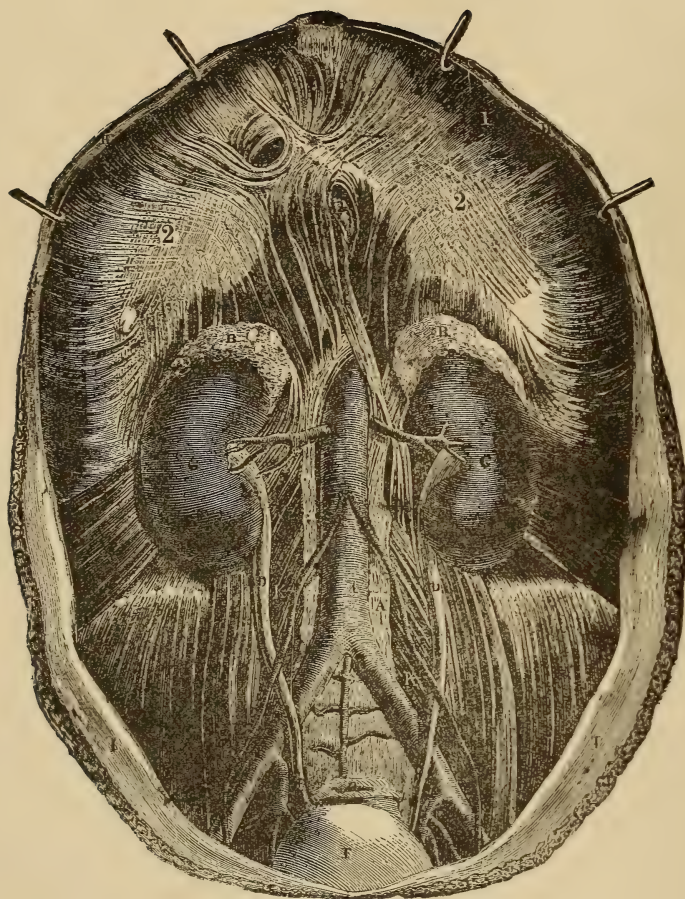
CHAPPED HANDS AND LIPS.

These disorders are well treated with glycerine and compound tincture of benzoin, equal parts, rubbed on one to three times a day. Those who suffer from these affections can keep the preparation in the house. Glycerine is good for some people, though not all, but there is great difficulty in getting it in a pure state. Pure vaseline is excellent. Though it may be

disagreeable to use, sweet oil may be put on the surface when going into the wind. If one will use a good article of carbolic soap at the toilet, he will be very well protected against the affection. There are those who suffer intensely from cracked and even ulcerated skin, and allow soil to accumulate and hard, thick scabs to form because of the pain in washing. They should scald some wheat bran or Indian meal at night, slowly soften up the hardened skin and soak off the dirt by bathing the parts in it while it is quite warm, then use some of the above means before going out in the morning.

[The following preparation, known as "Sedative Saxoline", is the best application I have ever used for all irritable conditions of the skin:—Pure vaseline, one ounce; pulverized boracic acid, twenty grains; balsam Peru, thirty drops.—HALE.]





42. THE URINARY ORGANS.

C, C, Kidneys. D, D, Ureters. F, Bladder. A, Spine. 4, Aorta, with two branches supplying the Kidneys. 2, 2, Diaphragm. 1, 1, Mucous Lining of the Abdomen, turned back.

CHAPTER VIII.

THE URINARY ORGANS.

ANATOMY AND PHYSIOLOGY.

THE first of the urinary organs are the kidneys, two bean-shaped glands, located on either side of the spine, below the liver and spleen described under the organs of digestion. They are dense and firm, yet very delicate in structure, copiously supplied with blood-vessels, each weighing from four to six ounces. The urine is separated from the blood by the kidneys, from which it passes through minute canals, called ureters, into the bladder.

The bladder is an elastic sac, oblong when distended, capable of retaining, without injury, fifteen or sixteen ounces, in an ordinary adult, and is located in the lower part of the abdomen. The bladder receives and retains the urine, ready for its discharge from the body, through a canal called the urethra.

Under ordinary circumstances, in health, the kidneys of an adult will secrete about two or two and one-half pints of urine in twenty-four hours, though this amount may, without indicating disease, vary considerably, according to habits, diet, and the temperature of the weather. When the body is active, as during the day, the bladder should be emptied as often as once in five or six hours. The calls of nature for the voiding of the urine should be promptly heeded, as serious results follow their neglect.

The organs described above are subject to their disorders, which one should study with due care, and upon which the physician should be consulted as freely and frankly as upon the disorders of any other organs of the body. Some general observations of value upon the urine, such as should be noted by all, are made in Chapter II.

DIFFICULT URINATION.—STRANGURY.

In this there is difficulty in passing water, with frequent desire to do so, accompanied by burning, spasmodic pain located in the bladder and extending to the outer end of the urinary passage, around the hips and down

the thighs, with a pressing, smarting sensation during and after a discharge. It is caused by some disease of the bladder or its canal; in children, by worms. When the disease becomes chronic, the character of the urine is changed, and it often contains mucus and pus.

TREATMENT.—Since this difficulty is a symptom of some disease, its treatment will depend upon the cause, and care should be taken to ascertain the special condition which may produce the trouble, and to treat it accordingly. The accessory treatment would apply in any case, whatever the cause, and its successful management depends largely on the diet, and the use of mucilaginous drinks.

Aconite.—When the trouble arises from a cold. **Cantharis**, for frequent, painful desire to pass urine, with burning, and with or without inflammation of the parts. Give **nux vomica** for spasm of the neck of the bladder, with aching in the back and hips, and frequent desire to pass urine. Give **lycopodium** when the urine deposits a brick-dust or reddish sediment, and especially if little particles of grit are found in the vessel. **Apis**, if there be difficulty in passing urine. **Cina** or **santonine**, when worms are the cause.

The warm hip-bath is an excellent accessory to the treatment, and often relieves without other aids; but, as this disorder is simply a symptom depending upon other causes, these causes should be sought out and removed, that the bladder may regain its tone.

INVOLUNTARY PASSAGE OF URINE.

This troublesome disorder is not a specific disease, but it has various causes. It may be the result of complete loss of power in the bladder to retain the urine, thus allowing it to escape involuntarily. This is especially the case in the aged, and is the result of mechanical irritation, pressure on the bladder, stone in the bladder, or an enlargement of the gland at its neck. It is largely confined to children, and is the result of worms, debilitated constitution, drinking large quantities of warm fluids, improper food or drink, indolence, and a bad habit; the latter, however, being met with quite seldom as a primary cause. The difficulty is usually worse at night; children who suffer from it sleep very soundly and much good may arise from taking them up the second hour of sleep.

TREATMENT.—In its treatment the first thing necessary is to ascertain, if possible, the special cause of the irritation, and to remove it. This undoubtedly would necessitate procuring medical aid. In many cases the cause is quite apparent, and may be removed by attention to a few simple rules. If caused by worms, the patient should be treated for them, and the

reader is referred to the article on that subject. If resulting from a debilitated constitution, means should be taken to invigorate the body and build it up. Gelseminum is indicated in a relaxed or paralytic condition of the muscle at the opening of the bladder. Nux vomica is needed for constipation and inability to retain the urine. Give cantharis when there is an urgent desire to pass urine during the day, with burning and irritation in the canal leading from the bladder. Chamomilla is indicated in cases found in teething children, with irritable temper, sallow skin and diarrhœa.

[No remedy is more efficacious than oil of turpentine, in small doses, two drops every four hours.—HALE.]

The bladder should be trained to retain urine during the day. The diet should be simple, avoiding all salt, sharp and sour articles of food, also liquor, spirits, tea and coffee. Meat may be eaten sparingly, but nothing hot should be taken in the after part of the day. Simple cold water, milk-and-water, and cocoa are the best drinks. The bladder should always be emptied before getting into bed, and, until the cause of the trouble is removed, this should be repeated once or twice during the night. Children who wet the bed should sleep on a hard mattress, with light covering, and be prevented from lying on the back as much as possible; this can be accomplished by attaching some hard appliance to the back so as to press on the muscles when the child attempts to lie in this position. Bathing is highly beneficial, by sponging the back with cold water and then rubbing it with a coarse towel. The cold compress placed over the bladder on retiring at night is often beneficial in the cases arising from loss of power in the bladder to retain the urine; also when indolence and bad habits are causes. Exercise in the open air should be encouraged.

RETENTION OF URINE.

This consists in an obstruction of the discharge of the urine from the bladder after it has been secreted by the kidneys. It is easily distinguished from suppression of urine by the distension of the bladder, which can be felt at the bottom of the abdomen, the bladder being flat and empty in suppression. Retention of the urine is due to some disorder of the bladder, or of the canal which leads out of it. The causes are indulgence in drink, retaining the urine too long, exposure to cold, spasmodic stricture in persons suffering from gleet discharges, or from an abnormal condition of the urine, and, in old men, from an enlargement of the gland at the neck of the bladder.

TREATMENT.—The treatment, in addition to the medicines recommended below, will consist in persistent and thorough application of warm

baths, warm fomentations, and mild, bland drinks. Injections into the bowels aid in establishing the functions of the parts. These aids alone are sometimes all that is necessary. In cases which do not yield to remedies, as those resulting from enlargement of the gland at the neck of the bladder, from permanent contraction of the canal leading from the bladder, or from over-distension of the bladder, application for the use of the catheter should be at once made to a competent physician. The diet should be light and consist of barley-water, gum-water, and other diluents.

Aconite should be given if there be much inflammation, pain and fever. Cantharis, for constant urging to urinate, with cutting pain. Nuxvomica, for painful, ineffectual efforts to urinate, caused by spirits, or by spasmodic contractions. Camphor is indicated by spasm at the neck of the bladder, with feelings of chilliness.

STONE OR GRAVEL.

This term is applied by the non-professional to nearly all difficulties of the urinary tract. It is not the intention to give here a full treatment of the disorder, but rather some of the leading symptoms by which it may be recognized, leaving its management to skilled hands. Gravel is a deposit or sediment in the kidneys or bladder, and may be passed in minute particles without causing any serious trouble; but when the granules become lodged and added one to another, they form what is commonly called stone. The stones are made up of the ingredients of the urine, and may form at any age, from boyhood to old age, though most common between the ages of fifty-five and seventy-five. The leading symptoms of stone are frequent passage of urine during the day and less frequent at night, and greatly increased by violent exercise, riding on horseback and the like; pain during and after passing urine, near the outer opening of the urinary organs, and a continuous desire for a time after the discharge to repeat it, the urine sometimes stopping suddenly during the flow. There are generally mucus and blood, and frequently, after severe exercise, blood is passed in considerable quantities.

TREATMENT.—This disease usually arises from disordered digestion, and attention should be given to correcting any derangement of this function. Cider is said to relieve some forms, but milk is undoubtedly the best drink. Sugar, fatty matter, alcohol, tea, coffee, strong beer, champagne, and the like, should be strictly avoided.

[There are two medicines which have lately been successfully used for dissolving stone, namely: The granular salts of citrate of lithia, a teaspoonful three times a day in a glass of soft water; and the fluid extract of *hydrangea*, thirty drops four times a day.—HALE.]

INFLAMMATION OF THE BLADDER.

This disease, in the acute form, is quite rare, except when it is the result of wounds, stone in the bladder, the introduction of instruments, or poison from disease. Occasionally, however, it proceeds from cold or damp. The chronic form is more common. It is usually due to inability of the bladder to completely empty itself of the urine, either from loss of muscular power, or enlargement of the gland at the neck of the bladder. The urine thus retained decomposes and acts as an irritant to the coats of the bladder. There is some pain over the region of the bladder, constant desire to void urine, with straining and much suffering. There is usually an abundant discharge of mucus, sometimes tinged with blood, this being especially the case in the chronic form. After standing in a vessel a short time and then being emptied, a large quantity of ropy mucus follows the urine in a mass, oftentimes exceeding a pint in twenty-four hours.

TREATMENT.—In the acute form, hot fomentations should be applied to the abdomen to relieve the pain, and rest in the horizontal posture be secured. A warm hip-bath, an abdominal compress, wet in turpentine-water, and mucilaginous drinks, promote recovery. The bladder should be washed out with small quantities of tepid water, which should be injected very gently into that organ, after the urine has been voided, and then allowed to flow off.

Aconite.—When in the acute form and the result of cold. *Cantharis* is needed in alternation with *aconite* if there is much burning in passing urine, with constant desire to void it. This remedy is especially adapted to the chronic form. *Belladonna* is useful if there is much nervous irritability. *Mercurius solubilis*, if resulting from venereal disease, and in any case may be a valuable adjunct. The diet should be light, and stimulants should be strictly avoided by those who are subject to the disorder.

[An infusion of *galium* (cleavers) or *triticum repens* (dog's-grass) greatly aids other treatment. If there is a mucous sediment, *chimiphila* (pipsisewa), or tincture *eucalyptus* (five drops every six hours) will remove it.—HALE.]

ALBUMINURIA.

This disease is a morbid condition of the urine, characterized by the presence in it of albumen, a substance which forms a large portion of the constituents of the body. This condition of the urine is generally a symptom of disease of the kidneys, though not always. It may exist for a short time without indicating disease of those organs. It is always present in Bright's Disease of the kidneys, but does not constitute that disease. It does not come under the domain of domestic treatment, but since it often follows

other diseases, as scarlet fever, measles, typhoid fever, and small-pox, we give a description of its characteristics and the manner of its detection. The symptoms are quite marked, such as debility, pallor of the surface, waxy and swollen face, loss of appetite, nausea, and frequent vomiting; and later, when the blood has become poisoned by means of the kidneys failing to excrete the urea, there will be poor sight, delirium, convulsions, deep sleep, and death. The disease is usually slow in its progress, and sometimes is not discovered until dropsy sets in. In the commencement, the urine is usually profuse, afterward growing less in quantity until the kidneys fail entirely to perform their function. At first, the urine may be of a dark or smoky color, due to the escape of the red portion of the blood; but usually it is pale, and when exposed to the test for albumen the following results are obtained: Having filled a test-tube say half-full of urine, slowly raise it to the boiling point over a flame, and boil it thus for a few seconds; if albumen is present in any considerable quantity, the urine will have a milky or cloudy appearance. Now add a few drops of dilute nitric acid, and, if this cloudy substance be albumen, it will settle to the bottom in a dirty-white sediment, while the urine again becomes clear. The amount of albumen can thus be determined each day, the extent of the deposit being the gauge.

TREATMENT.—This disorder should command prompt attention, and, as it is usually the result of an obstruction of the healthy action of the skin, the functions of the latter should be established as soon as possible. This can be accomplished by producing free perspiration by means of the cold or hot pack.

Aconite is useful in the first stage, if there is much fever. Give arsenicum for pale, waxy skin, dropsical condition, thirst and scanty urine. Apocynum for scanty urine and dropsy. Mercurius corrosivus is well adapted to the disease, especially when following scarlet fever and accompanied by scanty, bloody urine, with frequent but vain desire to make stools, delirium, and heavy sleep.

DIABETES.

There is a great diversity of opinions upon the questions as to the causes of this disease and the organs involved in it. Post-mortem examinations have been made with varying results. One case may exhibit no lesion of any organ, while in another all the organs and functions of the body are implicated in the general derangement. Some suppose it is due to deranged digestion; others, to some abnormal condition of the liver; others, to an affection of the nervous system; others, to changed chemical action in the blood; still others, to some peculiar condition of the kidneys.

The last is, however, generally denied, though the excessive flow of urine is one of its main local manifestations. Neither does the quantity of water taken as a drink account for this great excess of urine, for the discharges of the latter often largely exceed the amount of both fluids and solids taken into the stomach in a given time. Whatever the cause, or the organs affected, the great changes which obviously occur exert a vital influence upon the whole body. The disease takes rank among the most formidable, and should command the earliest and most earnest attention. The symptoms are often so obscure that its existence is not known for some time after its invasion, perhaps for months; hence the importance of having some knowledge of its characteristics, so that one may the more readily suspect its approach, and seek the requisite skill for its treatment. It is the present purpose to impart such knowledge.

The main symptom, and the one usually first to attract attention, is the excessive thirst and large flow of urine. In health, the quantity of urine passed by an adult in twenty-four hours is about forty ounces, or two and a half pints, with a specific gravity of 1015 to 1020. In saccharine diabetes, it may exceed twenty pints in the same time, and will have a specific gravity of 1025 to 1040. At the latter rate, the sugar thrown off in the urine would amount to nearly two and two-thirds pounds each day, and a patient would thus discharge in a few weeks a quantity of sugar equaling in weight his whole body. When the functions of the animal economy by which the sugar is used up in the blood are thus at fault, the result to the system must be a great physical change and constitutional disturbance, even though the amount of sugar passed should be far less than that named above. We recognize two forms of the disease:

1. *Diabetes Insipidus* consists in an excessive flow of clear, colorless urine, containing no sugar, generally due to some nervous disorder, accompanying hysteria in particular. This form is of little moment, and, being a symptom instead of an independent disorder, usually yields when the primary difficulty is treated.

2. *Diabetes Mellitus* is marked by an excessive amount of urine which contains an abundance of sugar, and by some constitutional disturbance. It is this form which we are now considering. It usually comes on with a feeling of lassitude, gradual loss of strength, and a sense of general weakness. This condition may not be so marked as to occasion apprehension until there be a loss of flesh and other symptoms. The patient afterward experiences an increased flow of urine, with thirst which becomes almost intolerable as the disease progresses; the tongue becomes red and cracked, its papillæ being enlarged; the mouth is dry and sticky, with a sweetish taste; the breath gives out an odor somewhat like that of chloroform; the

appetite increases; there is a sense of sinking at the stomach; the bowels are sluggish, their contents being dry, hard, and passed with difficulty; the skin is dry and harsh; the hands and feet burn; the hair falls out; the body becomes greatly emaciated; the heart's action is involved; the temperature of the body is lowered, sometimes going down to 94. During the development of these symptoms, the urine increases, its specific gravity being higher and its density greater from the sugar deposited in it, and it has, when evaporated, a sweetish smell, like that of new hay or milk. Of the various methods of testing urine for sugar, we present two which will at once detect the sugar if it is present in any considerable quantity.

(1). Trommer's test is most often applied, and is as follows: Fill a test-tube half-full of urine; add two or three drops of a solution of sulphate of copper (blue vitriol) to make it slightly blue; then add liquor potassæ enough to clear it by re-dissolving the precipitate which at first forms; let it now boil up once over a flame. If sugar be present, there will be a reddish-brown precipitate of the sub-oxide of copper; but if there be no sugar, the precipitate will be a black oxide of copper.

(2). The second test is this: Fill a test-tube half-full of a mixture of one part of liquor potassæ and two parts of urine, and boil it over a flame a short time. If sugar be present, the mixture will take on a yellowish-brown color, which becomes more pronounced as the boiling continues. If the urine has a large proportion of sugar, it will become almost black, or very dark brown.

If these tests be applied to the urine of diabetes insipidus, the results will be the same as when they are used on healthy urine; that is, Trommer's test will produce a deposit of black oxide of copper, and the potassæ-test does not change the color of the urine. Another means of distinguishing the two forms of diabetes is found in the specific gravity of the urine, upon which the reader is referred to the remarks on "The Urine" in Chapter II. If sugar exists, the specific gravity is above normal, never being below 1025, and usually reaching 1035 to 1040, according to the amount of sugar. In diabetes insipidus, on the other hand, the specific gravity is below normal, going down perhaps to 1007.

TREATMENT.—In the treatment of this disease, much importance attaches to the condition of the digestive functions, and a large proportion of medical men make the diet the main consideration. When starch is taken into the system, it is changed into sugar by a peculiar action of the liver. Hence, an effort is made to exclude those articles which contain starch, and to supply those which abound in nutritive properties, such as fat meats, fish, oysters, eggs, milk, good soups thickened with finely powdered bran, cocoa prepared from the nibs, and lettuce with oil and vinegar. From the list of

approved foods, those are selected which best agree with the individual patient. As a substitute for ordinary bread, cakes and bread are made of bran, or of ground-almond powder, or of gluten and bran, eight parts of the former to two of the latter.

Trousseau says: "Clinical observation has shown that vegetable food increases, while an almost exclusively animal diet diminishes, the quantity of sugar which diabetic patients pass in the urine. This is not because when we keep patients on an animal diet we deprive them of the alimentary substances which furnish saccharine matter in greatest abundance. We have seen that saccharine matter is produced when the diet is animal, as well as when it is vegetable, though in less quantity; we have also seen that sugar taken as an aliment is transformed in the liver into a special substance very different from diabetic sugar, and that the latter is exclusively a hepatic [liver] excretion. An animal diet suits diabetic patients better than a vegetable diet, because the latter, particularly when it is feculent, increases the excess of functional activity both of the liver and kidneys—it is because vegetables are more diuretic than animal substances, as is shown by a much larger quantity of urine being passed by herbivorous than by carnivorous animals. The precept laid down by Rollo, and followed since his day, of giving diabetic patients a diet as nitrogenous as possible, is in accordance with the teachings of physiology. Nevertheless, it is necessary to guard against adopting extreme views, and believing that diabetes demands an exclusively animal regimen, involving rigorous abstinence from every other kind of food. In fact, you will meet with diabetic patients who pass very little glucose in their urine, whilst they adhere to a regimen consisting only of green vegetables containing a large quantity of chlorophylle, such as spinach, sorrel, cabbage, and cress; nay, even when they take acid fruits, such as currants, raspberries, and cherries. In a disease in which disturbance of the nutritive function plays unquestionably a leading part, it is of the utmost importance to avoid everything which might increase that disturbance; and, consequently, it is necessary to vary the food so as not to induce loathing, a speedy effect of the exclusive use of the same kind of aliment. * * Though an exclusively animal diet immediately diminishes the thirst and excessive diuresis [flow of urine], it soon occasions intolerable loathing, and the health of the patient, which had seemed to be improving, is again deranged, and indeed becomes worse than it had been previously. On the other hand, however, if we rest satisfied with greatly diminishing the proportion of feculent nutriment, and allow the use of fruits and green vegetables, both appetite and strength are maintained." The same author remarks that a large quantity of glucose, or sugar, may be passed in the urine for years with hardly any derangement of health, and he recommends

that, to those who cannot conveniently exclude bread from their diet, a small allowance of it be given, that made of rye or wheat being admissible, but not that made of gluten.

Skimmed milk has accomplished such good results that it is spoken of separately, not only as an article of diet, but also as an agent for reducing the quantity of urine and the amount of sugar therein. In one case reported, the patient took five pints a day for six weeks, and at the end of that time the urine decreased in quantity, while the specific gravity fell from 1040 to 1017, the patient meanwhile growing stronger and increasing in weight. Experience has shown, however, that, in order to derive benefit from its use, it should constitute the exclusive diet, and be given in the same quantities at stated intervals. Seven or even ten pints may be taken each day, divided into regular meals. Koumiss will accomplish the same results as the milk, and is sometimes preferable, as determined by trial. After the milk-diet has been used about six weeks, if the usual improvement has been experienced, the ordinary diabetic diet may be substituted.

Acidum phosphoricum has effected great results in an early stage, before the constitutional symptoms have become extreme. The special symptoms indicating its use are frequent urgings to urinate, pain in the back and loins, emaciation, and sense of great weakness.

Uranium nitrate or muriate, in connection with acidum phosphoricum, has reduced the quantity of urine from four quarts to three pints in four months, and the specific gravity from 1048 to 1025. In connection with bromide of potassa, it has changed the urine from six quarts in twenty-four hours, with a specific gravity of 1038, to two and a half pints, with a specific gravity of 1023, this great change being effected in six weeks.

The saline waters, such as Vichy, Carlsbad, and Bethesda, have done much good, and can generally be taken with benefit. Water should be used freely, both to quench thirst and to eliminate the sugar from the blood. Nor can too much be easily said in favor of the use of water on the body. Warm baths should be taken daily, followed by brisk rubbing. Exercise in the open air is invaluable, and should be taken as freely as the strength will warrant. The patient should be encouraged to take a hopeful view of his case, and, as far as possible, he should know only its bright side.

BRIGHT'S DISEASE.

This disease, known also as nephritis and inflammation of the kidneys, is not properly within the domain of domestic practice, because of the insidious manner of its approach, the obscurity of the symptoms in the earlier stages, and its grave nature generally. Yet its growing prevalence and

the necessity of prompt attention demand the most careful study by all, that it may be detected in an early stage, and thus means be taken for its relief at a time when they will be of avail. It is both acute and chronic. The acute form arises from some special and sudden influence, as exposure to cold, the effects of fevers, particularly scarlet fever, irritating drugs, and alcohol. The chronic form follows neglected cases of the acute type, bad living, intemperance, constant exposure to wet, working in lead, as in painting and plumbing, and constitutional disease, such as gout and scrofula.

Acute Bright's Disease generally comes on suddenly, and is marked by fever; dry, harsh skin; quick pulse; puffiness of the eyelids; thirst; nausea; as the disease advances, decrease in the quantity of urine; dropsical symptoms develop; the face becomes bloated, shiny and waxy; as the case advances, nausea, vomiting and thirst are intense; the eyesight is impaired; the urine is almost entirely suppressed, is passed with severe burning pain and frequent urging, and has a dark or muddy-brown appearance; convulsions and death ensue, if relief is not given. This type often follows scarlet fever, either from the action of the scarlatinal poison on the kidneys, or from exposure to cold during the scaling process. Mild cases of scarlet fever should be especially watched, and the patient be carefully guarded against exposure to cold. The urine should be frequently examined for albumen during this fever, the manner of doing which is described in the article on Albuminuria.

Chronic Bright's Disease is usually more insidious, coming on slowly, and attended with a general impairment of health, pallor of the face, debility, and pain in the loins. Such a condition may continue some time without pronounced indications of disorder in the kidneys; but eventually there will be a frequent desire to pass urine, particularly at night, the quantity being increased for a time, but decreasing as the disease progresses. In these later stages, the face is pallid, swollen and waxy; the appetite is impaired; there is nausea, with acid or acrid risings from the stomach, and, after a time, severe vomiting, this condition being apparently independent of the kind of diet used. The urine is light-colored or smoky, and usually has a specific gravity below 1015 at the commencement, and going down as low as 1004 in the late stages, being then almost suppressed and of a pale sickly color. The disease is slow in its progress, but is none the less alarming. The kidneys becoming unable to carry off the urea, the latter enters the blood as a virulent poison, so affecting the nervous system as to induce delirium, convulsions, coma and death. This poison also invades the serous membranes, the sac which envelops the heart, or the heart itself, inducing disease in these parts, dropsy, and death from valvular derangement.

In either form of this disease, the kidneys will undergo more or less

organic change, and too much pains cannot be taken to gain an early knowledge of its approach. Though some remarks on treatment are made for those who cannot secure the best medical aid, we wish to impress on all that it is of the highest importance for them to seek the most thorough knowledge and treatment that are within reach.

TREATMENT.—The treatment of the acute and chronic forms is essentially the same. An examination of the urine should be made daily to determine the amount of albumen thrown off (see Albuminuria), and microscopical tests should be made to ascertain the extent of the organic degeneration of the kidneys. In the acute form, accompanied with fever, give aconite, but discontinue it as soon as the fever disappears. When the urine is scanty, and mixed with blood, benefit arises from one to five drops of turpentine every two to four hours. Belladonna is efficacious in acute cases, and whenever there are flushed face and great bearing-down pain. There is little doubt, however, that mercurius corrosivus is the most valuable of all remedies in both the acute and chronic forms, its leading indications being frequent urging desire to urinate; scanty and bloody urine; albumen in the urine; rapid degeneration of the kidneys. Acidum phosphoricum is also good for rapid breaking down of the kidneys, and for loss of blood as indicated by paleness, with a general decline of strength and spirits.

Baths, if properly used, are of great service, since they tend to carry off through the skin the fluids whose elimination is generally thrown upon the kidneys, and also to free the blood of the poisons which are generated or retained as the result of imperfect action of the kidneys. The importance of baths in this disease leads to a repetition here of some remarks about applying them, which are made in another chapter.

If the patient is strong and his powers of reaction are good, the cold pack and hip-bath may be used. First let the patient sit from three to five minutes in a tub partially filled with water at a temperature of 70° ; wring out a sheet in water of the same temperature and wrap the patient in it from head to foot, covering with several thicknesses of woollen blankets; if the feet remain cold, put a hot-water bag or bottle to them. In fifteen or twenty minutes the patient will become warm and soon break out in a profuse perspiration. Let him remain in the pack an hour and a half to two hours; after he comes out, sponge him with cold water and rub him thoroughly with dry towels. If reaction should not be prompt, and the patient should remain cold or chilly after being in the pack, the hot-water pack should be used as follows:—Let the patient sit in a tub of water at 102° , with the feet in a pail of water at the same temperature, a woollen blanket being closely wrapped around the tub, pail, and the body of the patient up to the neck. Continue this from three to five minutes; then

place the patient in the bed, enveloped in the blanket and covered with several other thicknesses. Perspiration will usually be profuse. If the patient seems weak after this, a small quantity of stimulants of some kind may be given.

Vapor baths are also beneficial, and are applied as follows:—Envelop the patient in a sheet wrung out in warm water, then wrap three or four thicknesses of dry blankets closely around him. Let him remain thus for twenty minutes to a half-hour, and then quickly dry him with towels and wrap him in blankets.

Cold sponging and friction with a bath-towel are highly useful. Rubbing with a dry salted towel is also good. Dip a towel in a solution of water and the sea-salt which can be obtained at a drug-store; let it dry, shake off any grains of salt that may adhere to it, and rub the body briskly and thoroughly.

The diet is important, and vegetable food is the best. The milk-cure, however, has produced wonderful results, and consists of milk exclusively. Give it cold or tepid, a half-pint every two or three hours. Such a course has been efficacious in some cases when all other treatment has failed.

The patient should have considerable outdoor exercise—as much as his temperament and strength shall dictate. A change of climate is sometimes necessary.

[Much experience and observation have convinced me that the indiscriminate use of mineral waters, particularly those of this country, so highly vaunted for the cure of this disease, oftener results in injury than in benefit. If drank at all, they should be used on the advice of a competent physician. The fact is that those waters which contain no mineral constituents are most beneficial in this disease.—HALE.]

THE GENITAL ORGANS.

Having treated of the disorders of the urinary organs, we shall perhaps be expected by some to pass on to the diseases of the genitals; but the writer will respect the public taste and feeling, and omit the details in troubles which are not topics of general conversation, and whose treatment is not appropriate here. Some general words of caution, however, will not come amiss.

Of the special books devoted to this subject there is occasionally one which is commendable in most features, and creditably fills its professed place. As some disorders in these parts may arise under the most legitimate conditions, just as in any other organs of the body, it is well that the family have

an *honest* treatise upon them. Great care should nevertheless be exercised in the purchase, since many writers, abusing the morbid and excitable curiosity which hangs around this subject, have presented the matter in a highly sensational form, as a means of increasing the sale. It is unfortunate that even some of the most sincere and temperate have not shown greater pains to appeal more dispassionately to the cool judgment of the ordinary reader.

For obvious reasons, the patient covers these disorders with careful secrecy, but he ought to reflect that the average physician comes in contact with such sufferers so often that no novelty impels him to speak of them outside of his office, to say nothing of the higher element of honor in the profession which makes the medical counselor the patient's safest confidant. He will thus sufficiently master his sensitiveness toward the profession to seek counsel, and will always see the wisdom of such a course, often learning also that an existing derangement had been no occasion for delicacy, though none the less needing treatment. We, therefore, urge any reader who has a fear or suspicion that he has a venereal disorder, or if he has any symptoms from the genital organs which cause anxiety, to at once frankly consult the family physician, or any other of a reputable and responsible practice, with a full and true statement of his case.

Above all, let those who, in the public print, in pamphlets, in books of "advice," advertise to treat these diseases be avoided in every case. They are impostors without exception, and it is a notorious fact that they often exact exorbitant charges, after firing the imagination, rarely or never cure a case, and very frequently take their ill-gotten fees for treating symptoms which are purely natural, and whose correction may be an injury to the system, while the consequent excited state of feeling is positively hurtful to the general health.

From these reassuring remarks we would not be understood as under-rating the sad results of some of these diseases. Hence our advice to give prompt attention to any suspected symptoms. Again, it may be said that the extent to which certain dangerous practices are carried on, especially by boys and girls, has not been over-stated by some conscientious writers, and that a solemn obligation with reference thereto rests upon parents, guardians, pastors and teachers. To such it will be well to make the general observation that they can often render valuable services to those whose minds have been wrought up by quack advertisements, by teaching them that the representations which they have read are grossly exaggerated, and by encouraging a hopeful state of mind. Great numbers of even the pure and innocent suffer a mental torture from this source, and the removal of apprehension is a very important element in the cure of any fancied or real disorders.

CHAPTER IX.

GENERAL DISEASES.

REMARKS UPON FEVERS.

WHEN the body is disturbed in its natural functions, it usually exhibits a general commotion, with increased frequency of pulse and rise of temperature. This change from the natural standard we call fever, and, as there are many conditions of the system which cause it, and different organs are involved in these conditions, fever is known under various names, according to the organs affected, and the locality of the disturbance. These may be divided into eruptive and non-eruptive fevers, the several kinds in each class presenting different phases, owing to particular influences acting upon individual cases.

Symptoms of fever, in general, are unusual heat, great thirst, quick pulse, coated tongue, languor, restlessness, loss of appetite, general obstruction of the secretions. The causes are varied, the principal ones being exposure to extremes of temperature, cold and wet, unwholesome food, poor air, over-exertion of mind or body, contagion, intemperance.

Fevers, of whatever kind, require much the same accessory treatment. The diet should be plain and simple. No animal food should be given, and the plainest broths ought to take the place of all solid food. The repugnance to food is nature's direct protest against the performance of labor by the stomach. The great thirst is a clear indication that the body needs water, and it was a blessed day when this sovereign remedy of nature was no longer refused to the fever-parched sufferer.

SIMPLE FEVER.

This form of fever is the result of some temporary obstruction to the functions, and usually lasts, even without medicine, but a short time, as one or two days. The symptoms are fever, alternating with chills, and usually followed by sweat, slight debility, and a return to health.

TREATMENT.—It requires but little treatment, and a few doses of

aconite, abstinence from food, and the free use of water, are all that is necessary.

TYPHUS FEVER.

This fever is the result of some specific poison in the blood, and, wherever it expends its force on the body, its origin and the existing conditions are the same. If it locates itself in the bowels, as is usually the case, it is called typhoid, or abdominal typhus; and, under any circumstances, is not such a disease as should come under domestic practice, if other aid can be obtained.

The symptoms may be varied in their character, coming on slowly and gradually; or, as in cerebral typhus, violently, attacking the patient with great severity, and, in many instances, running its course in a very few days. The usual course, however, is the following: For a few days previous to an attack, the patient feels tired, disinclined to move, disturbed in his sleep by bad dreams, and has loss of or craving appetite. This is soon followed by prostration, weak pulse, white, coated tongue, pain in the head, aching of the whole body, heat and dryness of the skin, great depression of the mind and body, constipation soon followed by diarrhœa, and usually delirium as the disease progresses. One of the most noticeable features of the disease is the extreme depression above spoken of, and when these symptoms present themselves and are persistent, means should be taken at once to arrest the terrible malady.

The causes are undoubtedly the introduction into the system of the poison exhaled or excreted from patients suffering from the disease; the contamination of the water used for drinking purposes; cess-pools; bad sewerage, and vaults situated near the water supply.

TREATMENT.—The results in this disease depend largely on the care bestowed, and special attention should be given to this part of the treatment. The patient should be placed in a large room, if possible, without carpets or heavy hangings, with good light and ventilation. He should be kept quiet, and, when delirious, guarded constantly to prevent his rising from the bed. The clothing on the bed should be changed often, and the body of the patient be bathed frequently. As the contagion or the infection lies largely in the excretions from the patient, these should be removed from the room immediately, and the vessels be thoroughly cleansed and disinfected. Disinfectants should be used also in all the apartments of the house, and the rooms be frequently and thoroughly ventilated. In most cases, the disease continues a long time, and the body becomes greatly emaciated from want of material to supply the waste. Every measure should be taken to obviate this by judicious diet, which should consist entirely of fluids, espe-

cially in typhoid fever, as serious results have followed the use of solid food before the ulceration (which exists in the bowels) has become healed. Stimulants also prove of great value, but should be used with caution. Milk and lime-water, gruels, light soups, wine-whey, and milk-punch are needed.

This fever is quite different from inflammatory fever in the manner of its approach, as well as in its course, and the exhaustion and debility are indicative throughout. At the first approach of the disease skilled aid should be summoned, but until such help arrives the remedies here named may be given according to their indications. If the fever is typhoid in character, with tenderness over the abdomen and discharges from the bowels the color of yellow ochre, with or without diarrhœa, the following will be given: Baptisia has the power to destroy the poison, and if given in the earliest stage, in one or two drop doses of the tincture every one or two hours, will often so modify and cut short the disease as to render it abortive in a few days; but should the disease have run several days, and the system become thoroughly under the influence of the poison, rhus may be given. Arsenicum is needed for excessive diarrhœa, discharges gray and ochre-colored, sometimes involuntary; tenderness and bloating of the abdomen, with rumbling and gurgling sounds; excessive prostration; small, weak pulse; great thirst. The value of this remedy in the above condition cannot be estimated, and its use should be persisted in, even in the worst cases. Acidum muriaticum is useful for great nervous depression; stupor; sinking down in the bed; sore throat and mouth, with foul, putrid odor. Terebinth is indicated by retention of the urine; dry, dark-colored tongue; collections on the teeth; hemorrhages from the bowels; for the latter condition it is of priceless value. For the symptoms indicating terebinth, turpentine may be used in compresses; wet cloths in a solution of one teaspoonful to a pint of boiling water, and apply these at once to the abdomen while hot. Give belladonna for flushed face; high fever; and when the brain is involved.

Water, pure and cold, should be given freely; it cools the parched mouth, and lowers the temperature. It should also be applied locally by sponging the body, a part at a time to avoid fatigue, until the whole surface has been bathed. When the abdomen is hot and swollen, the wet compress should be applied; it lessens the diarrhœa, checks the ulceration, and in a great degree obviates the tendency to hemorrhage. The dark collection should be removed from the teeth, and the parched and dry tongue be moistened with lemon-water, orange-juice, and the like. The water used for bathing and cleansing the mouth may contain a little perfumed carbolic acid. The greatest care should be exercised during convalescence, and the orders of the medical attendant be strictly followed. The foolish notion of allowing the patient objectionable

articles because he may have a craving desire for them should never be entertained, as many times *a convalescent case has proved fatal from hemorrhage or other causes which irritate an unhealed ulcer in the bowels.*

BILIOUS, REMITTENT, OR GASTRIC FEVER.

This fever, as its name implies, involves the organs of digestion, as the liver and stomach, and is remittent in its type. Sometimes it is quite severe in its character, and, unless promptly met, may terminate fatally, especially when occurring in warm climates. Its characteristic symptoms are irritability of the stomach, causing vomiting that is often violent, the smallest particle of food producing severe retching and vomiting; the bowels are either constipated or loose, and the latter condition is sometimes very marked; the skin has a yellowish hue, and is usually dry; there are alternate chills and flushes of heat, much headache, throbbing of the arteries in the neck, dry tongue, excessive thirst, tenderness over the stomach, and pain in the liver. The fever generally comes on about noon and goes away during the night, the patient being nearly, but not quite, free from it in the morning. Delirium, preceded by giddiness, often occurs, and when the patient is dull and lethargic, a severe form of the disease may be expected. Under proper treatment in mild cases the disease declines about the fifth day. In bad cases, however, as those attended with jaundice, there follow vomiting of a black or coffee-ground substance, foul breath, deep sleep, convulsions, and death.

TREATMENT.—This disease needs active treatment, and the first efforts should be directed toward reducing the fever during its paroxysm, and, if possible, obtaining the intermission or entire subsidence of the fever. This is often done by the use of aconite. It should be given during the hot stage in frequent doses; and when free perspiration takes place, and the patient is cool, quinine should be given until the violent attack comes on. Gelseminum is desirable for the introductory stage, and for flushes of heat followed by chills; also as a preventive. Veratrum album is indicated by excessive vomiting with pain, and by black vomit. Give arsenicum for great exhaustion, diarrhœa, and general sinking of the vital powers.

INTERMITTENT FEVER.—FEVER AND AGUE.

This very common fever is found in all climates and countries. It is more prevalent, however, in newly-settled localities and in districts having large tracts of low, marshy land. The germs which are said to produce it are generated by exposure to the sun's rays of new soil turned over, stag-

nant pools in long drouths, decaying vegetable matter, marshy lands, swamps near rivers of deficient drainage, newly-made canals, and the like. The poison thus produced is called malaria, and many diseases are attributed to this source.

A real paroxysm of this disease consists of three stages, all of which are more or less marked in their characteristics. These stages are the chill, the heat or fever, and the sweat, one or more of which may be wanting and yet there be in the periodical features all the conditions of a regular type of the disease. The chill usually comes on gradually; there is a creeping and shivering of the surface of the body; the blood seems forced from the surface; the nose and face are pinched; the nails blue; the hands pale; there being also thirst, headache, and, not unfrequently, nausea and vomiting. This condition lasts from a few moments to three or four hours, and is followed by the stage of heat, which comes on slowly, and is accompanied with chilly sensations. After a time the heat becomes intense, and so continues from one to several hours, with varying symptoms in each individual case. The third stage, that of sweat, closes the paroxysm, and is usually attended with great relief to the patient. The interval which now follows is called the intermission, and may vary in length from six or eight hours to several days. The attacks have been known to occur but once in seven days, and even at longer periods. The most frequent forms are those which occur daily; less frequent ones, twice daily. Under the name of "ague" the disorder is quite common.

TREATMENT.—The treatment of ague consists in palliatives during the paroxysm, and, during intermissions, the application of such remedies as seem indicated in the special case. The indiscriminate use of quinine and the various ague balsams should be discountenanced, as in the greater portion of the preparations quinine and arsenic are the principal drugs used, and often the system becomes saturated with these poisons, deranging the functions of the liver, spleen and kidneys, and producing those chronic cases which one sees so often in malarial districts. During the stage of chills, heat may be applied in any manner possible, and the patient should not nerve the system up to resist the chill, but relax the muscles as much as possible, allowing the chill free scope. This will often be marked by relief from the distress, and the chill will soon cease.

During the stage of fever, the following remedies will be found useful: Aconite for high fever, dry skin and thirst. Gelseminum is indicated by fever accompanied with chilly sensations, great restlessness, pain in the flesh, moist skin; and also by paroxysms occurring in the after part of the day.

During the stage of intermission, to prevent a return of the paroxysm, give arsenicum for great thirst; burning pain in the stomach and limbs;

much prostration; coldness of the extremities; loose, watery diarrhœa, with greenish stools; chronic cases. The symptoms for ipecac are chills increased by external warmth; nausea; entire absence of thirst; thick, yellow coat on the tongue, which is moist and sticky; cold hands and feet. Give quinine for yellowish complexion; sinking, faint feeling at the stomach, without hunger; enlargement of the liver and spleen; slimy, bilious diarrhœa; sensibility to currents of air; depression and irritability. This remedy is especially adapted to recent cases, occurring in malarious districts. It should be used with caution, and only in cases in which it is clearly indicated. The best form for administering it is the following:

Sulphate of quinine,	10 grains.
Sulphuric acid,	2 drops.
Water,	2 ounces.

Mix.

The dose for an adult is two teaspoonfuls every two hours during the interval between the paroxysms.

[It should be remembered by all who take or give quinine that it should not be used when the *tongue is coated*. Do not be in a hurry to break the chills, but give doses of mercurius, podophyllin, or euonymin, till the tongue is clean and *moist*; then take quinine in any form, one grain every hour or two during the intermissions. If the ague is broken up in this way, it rarely returns.—HALE.]

Sometimes the patient has a ravenous appetite during the intermission. This should be governed, and a light diet of gruel and broth be used. Animal food especially should be taken sparingly, a moderate quantity of vegetables, with plenty of fruit and water, being the most desirable.

Patients living in a malarious district would receive great benefit by a change to a more healthy locality. When this is impracticable, they should not go out in the evening air, and should sleep in an upper room, excluding the outside air as much as possible. Exercise during the day in the sunlight and open air is highly beneficial.

YELLOW FEVER.

This fearful disease expends its violence mainly in the lower latitudes of the United States, in Central America, and the neighboring islands, but has visited Canada, New England, and other Northern States, and has also invaded the western countries of Europe and different parts of South America. It is due to a specific poison, not well understood, which is generated outside of the body, is favored by animal and vegetable decomposition in a high degree of heat, and is carried from one person or locality to

another by the atmosphere, clothing, merchandise, holds of ships, and other portable means. The germs of this poison are destroyed by freezing or exposure to a heat at or above 212° . An attack in a given patient terminates in six days on an average, but may last a longer or shorter time. The poison remains in the system from a few hours to several days, or even for weeks, before the disease develops. This poison is engendered by decomposing matters and heat, as said before, but some degree of moisture in the air and soil is requisite. Though proximity to a large body of water seems to be necessary in the beginning, the disease may spread into other localities. These conditions, it will be noted, are more particularly connected with extended sections than with separate homes, though there is no question that a given household is more or less exposed than the neighboring ones according to the greater or less cleanliness observed about it. Hence, the necessity of quarantine and general precautions against filth needs no mention here, since public authority always has these matters in charge. But the difficulty, often impossibility, of getting that medical aid during an epidemic which should always be secured when accessible, makes a domestic treatise upon the subject peculiarly fitting.

The disease usually comes on, during either the day or night, without much warning, though occasionally one will detect premonitory symptoms in headache, pain in the limbs, loss of appetite, and general uneasiness. The real attack is ushered in by a more or less marked chilly feeling in the back, which is at once followed by serious illness, with sharp pains in the temples and forehead; the pains in the back above noted become prominent, and those of the legs affect the calves in particular; the chill soon alternates with heat, and then disappears, though the heat continues. The respiration is irregular and excited; the pulse full, hard, and above 100; the temperature rapidly rises to 102° or higher; the skin is hot and either dry or covered with moisture, sometimes giving out a sickening odor; the tongue has a white or yellowish coat, with scarlet tip and edges; the throat is red and swollen; the face flushed; the eyes very red; the bowels constipated; the discharges, if any occur, are dark and offensive; the region of the stomach is very tender, and there may be nausea and ineffectual efforts to vomit; there may or may not be delirium. After two days, the pulse rapidly falls, but the fever as rapidly rises, except in the few favorable cases in which both pulse and fever subside, and usher in a speedy recovery. In a day or two longer, the bowels may discharge, the fever subside, and convalescence commence. Generally, however, this welcome turn is not experienced, but the patient passes into a deceptive calm for a few hours, when the fever again rises, with small, thready, and widely varying pulse; restlessness and delirium return, or the patient is very indifferent; the tongue

has a brownish coat; the gums purplish; the eyes yellowish; the urine scanty and yellow; often twitching and jerking of the muscles; the skin may be yellow, thus giving the name to the malady, but such a condition generally does not take place; perspiration becomes very profuse; the stomach grows more and more tender, repelling all food and drink, its discharges being ejected in peculiar spurts, rather than in the heavy masses common in ordinary vomiting, and are at first made up of thin mucus and bile, but afterward mainly of blackish blood, whence the name "black vomit." This black vomit is a grave symptom, and may be either very scanty or very profuse; yet it does not appear in the majority of cases, as has been noted about the yellow color of the skin, these two being assumed by the uninformed as invariable. Though these symptoms mark a grave disease, the patient should take as hopeful a view as possible, and in this he will be aided by the knowledge that the chances of recovery, as shown by statistics, are largely in his favor.

TREATMENT.—If an epidemic is prevailing or threatening, take *cimicifuga* or *crotalus* as a preventive, coupled with strict sanitary regulations. For the premonitory symptoms, as pain in the head and limbs and nervous uneasiness, give *belladonna* in alternation with either *caffeine* or *bromide of potassa*. As soon as any chilliness comes on, give *camphor*, either the tincture or *bromide*; this should be followed up with *aconite* in alternation as soon as any fever appears, and the latter will almost invariably be demanded within the first twenty-four hours. The special indications for *aconite* are burning headache, pain being particularly marked in the temples and forehead; dry mouth; great thirst; heat, nausea and tenderness of the stomach; restlessness and anxiety; pain in the limbs; dizziness and paleness upon rising; difficult and painful urination; great loss of strength.

Belladonna is needed if there be irritability; violent aching of the head, particularly in the back part, and extending down the neck; thick, white or brown coat on the tongue; fullness and discomfort in the stomach; very dry mouth; dark, puffy face; great thirst; nausea or dizziness upon rising; full, hard, rapid pulse; dark, brownish, scanty urine; general pain.

Arsenicum is both efficacious in the stage of calm, when friends are apt to suppose the patient is recovering, and is the remedy imperatively demanded if the patient passes out of this calm into the more alarming condition which usually follows. It is indicated by much anxiety and restlessness, and even terror; yellow or livid skin; dry, dark tongue; great thirst; vomiting after drinking; intense pain in the head; delirium; great uneasiness in the stomach; black vomit; urine suppressed, retained, or passed involuntarily, and perhaps bloody; pulse irregular and very feeble; coldness of skin, with internal heat; cold, clammy sweat; rapid sinking of strength.

Ipecac should be given for the paroxysms of vomiting; pale and puffy face; dizziness; chilliness in the limbs and back; much anxiety and weakness.

Give cantharis for suppression or retention of urine; or for bloody, turbid scanty urine; pain in the loins; cold sweats. Apis is also a superior remedy for suppressed or high-colored urine, other symptoms for its use being indifference, red and swollen face, dry tongue, hot mouth, headache, and inclination to sleep. Since urinary derangements in yellow fever are so alarming, we mention opium and hyoscyamus as being well worth a trial, especially for retention. A tea made of watermelon seeds is to be given for suppression of the urine when other remedies fail. A weak dilution of turpentine will be useful, cloths wet in it being put over the loins and bladder.

Mercurius is valuable for a dirty-yellow skin; puffed face; bleeding of the gums and offensive breath; profuse flow of saliva; tongue swollen, coated white, and bearing the prints of the teeth; swelling over the liver; great thirst; bilious, slimy vomit; dark, turbid urine; yellowish perspiration; swelling of the glands; violent headache; dizziness; anxiety and restlessness; inflamed and sensitive eyes.

The distinctive symptoms for *nux vomica* are difficult speech; dry mouth, with mucus in the throat; tension in the stomach; hiccough; bitter and sour belchings; contraction of the abdominal muscles; slimy, scanty stools; pain and burning in the bladder, with difficult urination; cramps and convulsions; yellow skin; aching and tension in the forehead; extreme sensitiveness and anxiety.

General Care.—Cold water applied to the body is very valuable when the patient is distressed with heat; but it must not be so used as to defeat that perfect quiet which is so essential. It can be put on the body with a sponge, and the feet may be put in a bath if such an act does not disturb the patient. A little spirits may be added to the water. In some cases it will be best to cover the patient with a sheet, wrung out in cold water, for a short time. If the stomach will retain it, cold water as a drink will be beneficial. In the beginning, a hot foot-bath will often be very grateful.

It has been wisely observed that good nursing in yellow fever is more important than all else. Insure the patient absolute rest. In the beginning, give copious injections every four or five hours until two or three discharges are produced. Hot-water fomentations are to be used for violent pains in the bowels. For pain in the loins and obstructed urination, use the turpentine and other means recommended above; injections of ice-water will be good for retention of the urine, which is a critical symptom. Bits of ice melted on the tongue will quench thirst, and some may be swallowed. An

infusion of orange-leaves is the most common and valuable drink in this malady. When the stomach is very sensitive and repels food, broths or gruels are to be injected into the rectum. In the early stages, give only a diet of arrowroot, sago, barley-gruel, and the like; but as the disease advances, sustain the strength with beef-tea, chicken or veal broth, with a little oatmeal, barley, or crumbled bread. In collapses, give tablespoonful doses of iced champagne, or teaspoonful doses of brandy. Be extremely cautious about the diet.

Keep the room cool and well aired. Frequently change the linen of the bed and patient. Keep chloride of lime, Platt's Chlorides, thymol, or other disinfectant in the room, and disinfect the bed several times a day. Immediately remove and burn all discharges from the stomach, bowels, and bladder. When the patient begins to recover, burn his linen clothing and the bedding. Woolen fabrics may be disinfected by heat at or above 212° , but burning them is safer. After the patient has died or recovered, and the precautions named have been taken about the clothing and bed, give a free draught of air for at least a week consecutively; wash the floors, woodwork, and walls with boiling water; whitewash or calcimine the walls. Take renewed pains to remove all filth from the neighborhood of the house.

To guard against infection, the nurse should keep studiously clean, maintain the tone and vigor of the body by good food and an abundance of open-air exercise, and frequently change the clothing. Above all, cultivate as cheerful a frame of mind as possible, and thus avoid fear, one of the most exciting influences in almost all epidemics.

SMALL-POX.

Small-pox is a continued fever, running through a certain course, and marked by a loathsome pustular eruption which leaves permanent scars. It is highly contagious and infectious, and may be carried from one place to another in the clothing, in the hair or beard, or in the atmosphere. It seldom attacks the same person more than once. It sometimes appears in an epidemic form after considerable periods of time, and is liable to become very fatal in its results. The comparative infrequency of the disease and the lack of compulsory vaccination, the only means known to prevent or modify it, have led to neglect in protecting the system against the contagion, and hence its alarming spread at times.

There are four stages in small-pox, and these stages exist also in varioloid, or modified small-pox: (1) The latent, or stage of incubation, the period between the reception of the poison and the stage of fever. (2) The febrile stage, which lasts about three or four days. (3) The stage of maturity,

which lasts about nine days. (4) The secondary fever and decline of the eruption, which vary according to the severity of the disease. The disorder commences the same as most ordinary fevers, with chilliness, heat, headache, sometimes delirium, thick, white fur on the tongue, flushed face, quick, hard pulse, sore feeling of the whole body, especially of the back and loins, *pain and tenderness at the pit of the stomach which are made worse by pressure, and vomiting*. The pain through the loins and the vomiting are the most characteristic symptoms. They are rarely absent, and, when they are excessive and continuous, indicate a severe form of the disorder.

On the third or fourth day the eruption begins to appear in minute red spots or hard pimples, which feel like shot in the skin, appearing first on the face, neck, and wrists, and then spreading over the body and extremities. It may also be seen in the throat and on the palate, causing sore throat, hoarseness, and cough. The pimples gradually increase in size, and are often mistaken for measles.

On the eighth day the contents, at first watery, change to a yellowish pus, and the pustules become depressed in the center and surrounded for a short distance by a rose-red margin. During the time the pustules are filling, the face and eyelids become badly swollen, sometimes so much so as to obliterate the features. The pustules may run together, forming great patches, which are liable to penetrate deeply, forming extensive suppuration. A disagreeable, sickening odor comes from the patient, and, by one accustomed to the disease, it may be recognized by this alone.

In about eight days from the appearance of the eruption, the pustules begin to break and discharge their contents, which form scales that dry up, and, in a good state of the system, fall off in four or five days, leaving a red hue to the skin for some time.

There are two stages in which there is the greatest danger, and in one of which the case terminates fatally, if at all: First, the commencement, when the fever and poison are so great that the patient succumbs to the shock in three or four days; second, in the secondary fever, when the pustules fill, more especially in the form of the disease in which the pustules run together.

We have endeavored to give as clear a statement as possible of the manner of detecting the disease, it being of the highest importance that it should be recognized early, in order that the patient may have proper care and treatment, and that means may be taken to isolate him from others, and thus prevent the spread of the disorder. We shall also give quite full particulars as to its cure and treatment, since it is many times impossible to get proper medical aid or other assistance.

To distinguish it from other diseases which have some features in

common, we give a few of its characteristic symptoms which may put us on our guard. The pain in the back and stomach is very severe, and such pain, when not found to be muscular, should lead us to notice the next feature, the eruption, especially when accompanied with vomiting. This eruption differs from measles in being perceptible to the touch, feeling hard, and conveying the sensation that small shot would if under the skin. It is not distributed in crescentic patches, as is the case with measles. Of the premonitory symptoms, the pain in the loins and the tenderness and sore pain in the stomach are characteristic of small-pox. As distinguished from typhoid fever, its attack is more abrupt and severe, without the insidious and uncertain approach which marks that fever. In chicken-pox, the eruption first appears in minute blisters, and does not suppurate, rarely becoming depressed, and the fever is mild. It also presents another marked feature, in the fact that its eruption often appears simultaneously with the fever and vomiting, and runs its course in a shorter time than in small-pox, the scales falling off in about ten days from the commencement of the attack.

TREATMENT.—This disease runs a specific course, and is not influenced by treatment, other than a mitigation of the symptoms. The lessening of the severity is largely effected by accessory means. A large, well-ventilated room, where there can be an uninterrupted interchange of air, with admission of that which is pure and fresh, is essential. If the weather is cold, there should be sufficient fire to warm the apartment while the windows remain open. Frequent bathing during the whole course is advisable, especially when the skin is dry and hot, or irritable. The whole surface of the body may be sponged with warm water to which is added a little carbohc acid. Especially in the last stage the body should thus be kept as clean as possible. Change of position in the bed is necessary to avoid bed-sores, and, when the pustules break and discharge their contents, wheat flour should be applied freely to absorb the matter. The diet is also important, and should consist of tea, toast, eggs beaten in milk, ripe fruits in their season, and roasted apples. As drinks, give *cold water freely*, milk and soda-water (two parts milk to one part soda-water), jelly-water, lemonade and barley-water. Small pieces of ice may be held in the mouth if the throat is badly swollen.

There are many devices to prevent pitting, the best of which is undoubtedly the painting of the pustules with olive oil or vaseline, or applying a paste of flour and thick cream. The last is an excellent means, as it allays the itching and excludes the light from the surface, a very important matter in the treatment of this disease.

Aconite should be given in the initial stage of the fever, and its use is

indicated by heat; dryness of the skin; high grade of fever; quick, hard pulse; pain in the head, back and loins; nausea and vomiting. Give half-drop doses every hour of *veratrum viride* if the pulse is very quick, and there is much sickness at the stomach. *Antimonium tartaricum*, considered by many a specific in small-pox, should be given as soon as the nature of the disease is ascertained, and continued at stated intervals throughout its whole course. Its greatest benefit is noticed during the stage of pustulation, especially if there be much nausea and vomiting. Other remedies may be alternated with it as they may be indicated. *Belladonna* is needed for severe pain in the head, delirium, and sensitiveness to light. *Mercurius* is useful during the suppurative stage, if there be severe sore throat, foul breath or bloody diarrhœa. *Apis* is indicated by great swelling of the face and eyelids, with scanty urine.

Those who are recovering from the disease should be kept isolated until the drying of the sores is complete, and the scales have all fallen off. The body should be thoroughly cleansed with carbolated water and clean clothes be put on.

Disinfection.—Infected clothing, bedding, and other articles that would be likely to retain the poison, should be burned; the rooms should be whitewashed, and, if papered, the paper should be removed, the walls be washed and repapered, the rooms being then closed tightly and thoroughly fumigated with burning sulphur; after which they should be left open for several days.

Prevention.—There is but one means known by which this terrible disease can be prevented or modified; that consists in vaccination. This should be thorough and should be performed by a reliable physician, who, under no circumstances, should use any virus except that which has been carefully selected from a healthy cow.

CHICKEN-POX.

This affection has sometimes been mistaken for small-pox, and in some things it resembles that disease quite closely. Some authors, in fact, call it a modified form of the latter. This is not true, however, as there are several marked symptoms which distinguish it from small-pox, and it has never been known to produce that disease, which it must certainly do, in its severe form, if possessing the poison of small-pox. It may be distinguished by the fact that the eruption appears quite early, sometimes simultaneously with the fever; there is rarely much disturbance of the system; the eruption first appears in minute blisters, which are seldom surrounded by any redness, are rarely depressed in the center, dry up and fall

off about the eighth day after the commencement of the disease, and usually need but little medical interference. Sometimes, if the pustule has been broken, it may leave an indentation or pit.

TREATMENT.—In some cases the fever is quite severe, and a few doses of rhus should be given until it subsides.

MEASLES.

This disease is generally preceded by the ordinary symptoms of catarrh or cold. There will be cough, sneezing, watery eyes, and running at the nose, accompanied with nausea, sometimes vomiting, and fever which is usually quite severe. These symptoms increase until about the fourth day, when the eruption appears, first on the face, next on the neck and breast, then spreading over the whole body. This eruption first comes on in small red spots, which multiply, run together, and form small crescentic patches.

Sometimes, if the symptoms are very severe and the spots are distinct and small, it resembles the first appearance of the eruption of small-pox, but, as the spots multiply, they form patches, and the resemblance is gone; again, the hardness under the skin, peculiar to small-pox, is wanting. The rash can be felt by passing the hand over the skin, as it cannot in scarlet fever.

The eruption is usually two or three days in coming out, and, if abundant, is more favorable. It remains about three days, the fever then abates, and the eruption declines, becomes of a brownish hue as it fades and ends in the outer skin coming off in minute, bran-like scurf. At this period, diarrhœa is liable to set in, but, unless it is excessive, it is not an unfavorable symptom. If the eruption be dark-colored, however, it should excite anxiety, for it is indicative of a severe form of the disease.

The disorder is liable to complications, as with pneumonia, capillary bronchitis, and diphtheritic inflammation of the throat. Like scarlet fever, it may be followed by disorders more difficult to treat than the original complaint. Since such a consequence is often due to improper treatment, the importance of securing skilled aid is emphasized. The disorders which more commonly follow measles are inflammatory affections of the eyelids, discharges from the ear, deafness, swelling of the glands, eruptions on the skin, chronic cough or hoarseness, and even tubercular disease of the lungs or bowels.

TREATMENT.—The treatment is often quite simple, and in the mild form good nursing and general care are sometimes sufficient. All cases, however mild, should be protected from exposure to cold or imprudence in

eating. The diet should be simple and consist of easily-digested articles, cooked fruits, toast, gruels and light broths. There is often great thirst, and water should be given freely; all drinks may be taken cold. The room should be large and airy, but the light should be modified, as serious results to the eyes have followed the neglect of this precaution. The temperature should be uniform, and the patient be kept comfortably warm. The old system of hot drinks, hot rooms, and a sweating patient under excessive clothing, should never be followed.

Aconite is needed for the primary fever; in fact, it is often the only remedy needed throughout. Give gelsemium if the eruption comes out and then recedes, or is slow in making its appearance, and when there is a tendency to convulsions. Pulsatilla is a very efficient remedy and is sometimes the only one required throughout the disease, the special symptoms for it being catarrhal affections of the mucous surfaces, producing derangement of the stomach and diarrhœa, with loose rattling of mucus in the air-passages; also catarrhal discharges from the eyes, nose and ears, worse at night. It is often of much avail in modifying the disease, if administered in an early stage or immediately after exposure. A dose three or four times a day should be given as soon as it is known that one has been exposed to the contagion. Give belladonna for red and inflamed eyes; inflammation of the throat, with difficult swallowing; tendency to delirium. Ipecac is needed for severe retching and vomiting, with much cough.

Bryonia is a valuable remedy when there is a tendency to lung-trouble or bronchial irritation, and is indicated when the pain is severe in the chest, worse when coughing or taking a long breath. It may be alternated with aconite during the fever stage, and with pulsatilla afterward, when these remedies are indicated. Mercurius is indicated by glandular swelling; ulceration of the throat and mouth, with swelling of the tonsils and difficulty in swallowing; bilious diarrhœa, with mucous stools.

In mild cases, a physician is rarely called and the foregoing treatment will be found efficacious. However, if the fever is high and the derangement of the stomach severe, medical aid should be summoned at once.

SCARLET FEVER.

This disease belongs to the eruptive fevers, and is both infectious and contagious. Its great prevalence and mortality have placed it among the most dreadful and fatal diseases. Statistics of the years 1863, 1864 and 1865 show a mortality of over ninety thousand, and in 1863 London alone lost 4,982. This is a return of the record of deaths alone, and says nothing of those who were crippled or left life-long sufferers from the results.

The symptoms are few, plain, and easily recognized. It usually commences suddenly, with ordinary symptoms of fever, a cold feeling, chills followed by a hot skin, quick pulse, nausea, vomiting, sore throat, and headache. The sore throat may be the first symptom noticed, and may precede the fever several hours. Again, the vomiting may be the first indication of an attack. The precursory symptoms usually last forty-eight hours, when the rash makes its appearance. The eruption is bright scarlet, and consists of small red points, which disappear on pressure and return again when the finger is removed. The rash first appears on the breast and extends to the face, neck, body, and finally to the extremities, at length covering the body with a bright-red glow which gives the skin a resemblance to a boiled lobster. The tongue is coated with a thick, white fur, is red at the top and edges, and the papillæ are seen in little red points sticking through the coating. After a time, the tongue cleans off, looks red and raw, and, from its peculiar appearance, is called a "strawberry tongue." The whole mouth and throat are red, and many times are quite dark in color. About the fifth day the rash begins to fade, and the fever subsides. About the eighth day the skin becomes rough and begins to come off in minute, bran-like scurf. Sometimes, however, large patches come off together, and often the skin of the hands slips off like a glove. This last-named condition is called the stage of desquamation.

The malady is highly contagious from the commencement of the fever, and may be carried from one place to another in clothing, bedding, carpets, and the like, and especially is this the case during the stage of desquamation, or scaling off of the skin. The free use of disinfectants, fumigation, and thorough cleaning of the apartments and the clothing, are necessary to destroy the poison.

The diseases following scarlet fever are numerous, and are marked by many different features in the same epidemic. They are not dependent alone upon the surroundings and care, but as well upon the manner in which the disorder expends its force on the system; and, in fact, the dangerous features of some epidemics may lie in the conditions which follow an ordinary and perhaps mild course of the disease.

TREATMENT.—The first thing to be done is to send for a physician, for, however light the attack, there is danger, and no one should attempt the management unless thoroughly acquainted with its many phases. Isolate the patient, and, if possible, place him in an upper room, with as little furniture and hangings as will meet the necessities; ventilate the rooms well, but prevent exposure to direct draughts of air, keeping the temperature about 65° or 70°. Modify the light; keep the patient cool; use light covering, increasing the same as the temperature of the body declines.

Sponge the body frequently with cool or tepid water, drying quickly in order to prevent too long exposure. If the vomiting is excessive, apply cloths to the stomach, wet in cold water, until other aid can be obtained.

If there be high fever, sore throat, difficulty of swallowing, glassy eyes, with dilated pupils, starting and crying out, belladonna should be given every one or two hours. Mercurius is needed when the throat is very much swollen and filled with mucus, with ulcers on the tongue and tonsils; it may be alternated with belladonna if the fever is very high, with the above symptoms. Give apis if the throat swells rapidly and there are sharp, stinging pains and scanty urine, and when the patient sharply cries out and rolls the head from side to side. Arsenicum is indicated by rapid prostration and sinking; cold surface, covered with clammy sweat; weak pulse; diarrhœa. This remedy is more especially adapted to the latter stage of the disease, and, when given during the scaling off of the skin, is said to hasten the process, thus relieving the kidneys and restoring the tone of the organs. During an epidemic, to prevent or modify an attack, belladonna should be given once or twice a day.

The diet, during the fever, should consist of light broths, gruel, milk, and the like, with a free use of water, and, if the thirst is very great, small pieces of ice may be given often. Ripe fruits and oranges will be found very grateful and beneficial. As the disease declines, a more substantial diet may be given.

The most common disorder resulting from scarlet fever is dropsy. This does not arise always from taking cold, as many suppose, but from the poison expending so much of its force on the kidneys, or suspending the functions of those organs, and thus causing the urine to be retained in the blood, to be deposited in the tissues. This result is very alarming, and active means should be taken to relieve the kidneys of labor, and to expel the urine from the body by other means. This can be done only through the skin, and prompt measures should be used to produce free perspiration, by means of the wet-pack, for the manner of using which, see below. Mercurius corrosivus exerts great influence over that condition of the kidneys which produces dropsy after scarlet fever, and is indicated when the urine is scanty, with a dark sediment in the bottom of the vessel, accompanied with frequent, painful desire to void the urine.

Wet-Pack.—The great importance of this treatment in scarlet fever, and in the diseases resulting from it, has led us to give the indications for its use, and the manner of applying it, in this place. It may be used, either hot or cold, in the commencement and during the active stage of the disease, and also in the latter part, or in the diseases following it. It is indicated, in the early stage, when the temperature becomes excessively high, or the disease

presents a very severe type; also, when there are convulsions. In the latter case, however, the pack should be preceded by the sitz or hip bath, and the patient then be placed in the pack in the usual manner. In the later stage of the disease, the indications are scanty urine, with dropsical appearance, the face being puffed and presenting a waxy, white hue; nausea and, later, excessive vomiting. At this stage, if the urine is placed in a test-tube and heat applied, it will curdle, and after standing will present a muddy-white sediment which will not dissolve upon the application of nitric acid.

The cold pack is preferable when it can be used, and should always take the precedence if there is proper reaction after the patient is put into it. But, if he should remain cold and weak, and free perspiration be not established, the warm pack should be used.

The best manner of giving the cold pack is to place an oil-cloth over the mattress, wet a cotton or linen sheet in water at a temperature of 68° to 70°, wring it out and spread it over the oil-cloth smoothly, removing all folds and wrinkles, having it long enough to reach from the top of the head to eight or ten inches below the feet. Remove the clothing from the patient and lay him on the sheet on his back, with the arms close to the side; fold one side of the sheet over the body closely, then bring the other side over smoothly, wrapping snugly about the neck and the feet. Cover the whole with a woolen blanket, tucking it closely about the body. Over all, place two or three blankets or quilts, wrapping them closely about the body in order to exclude the air. In a few seconds the patient becomes warm, and in about fifteen or twenty minutes will become restless and want to get out of the pack; but this is soon followed by profuse perspiration, and usually the patient goes quietly to sleep and feels better upon waking. He should remain in the pack from three-quarters of an hour to one hour and a half, according to the effect produced, and then be placed in a shallow bath of tepid water and washed, the whole body being well rubbed with coarse towels until dry. Children usually make considerable disturbance while being put into the pack, but the nurse must be firm and, if necessary, hold them until the clothing is well wrapped about them, when they will become quiet.

DIPHThERIA.

Of all the diseases which come under the care of the physician or the observation of the public, none are better calculated to deceive the inexperienced than diphtheria. Its insidious approach and subsequent course, its malignancy and terrible fatality give it a leading place among the diseases which reasonably inspire trepidation in the mother's heart. There is a pressing necessity that it be detected at once, and that the best possible treatment be applied.

The disease occurs much more often than many suppose, and some localities, including the cities, are seldom entirely free from it. Again, one family may be invaded, and all neighbors escape; though more often a larger part of the community is affected. These remarks lead to the question of contagion. By many it is thought to be transmissible from one person to another by contact, by the medium of the atmosphere, or by an entrance to a house in which it exists. Consequently, families often have great difficulty in securing nurses or other assistance, and are shunned as if infected with small-pox. It is not, however, a contagious disease. Though it is infectious and has germs which may be transmitted to others, this effect ensues only when the system is in the required condition for the reception and propagation of those germs. If one is subject to the influences which favor its development, he will most likely be attacked. Hence, if a whole family or community be subjected to the peculiar conditions which tend to the disease, all who are exposed will be liable to attacks.

To avoid a multiplication of cases, the patient should be carefully isolated, and every means be used to prevent the spread of the malady. The surroundings should be thoroughly disinfected, all cess-pools, vaults and foul places be cleansed, and articles that are liable to contain any of the excretions from the patient should be burned, or otherwise rendered harmless, such attentions being especially directed to the discharges from the throat. The vessels should be promptly emptied and washed, and some disinfecting fluid be put in them to destroy any germs that may remain. The fact should be kept in mind that the disease may be contracted by the medium of the saliva or membranous shreds from the patient getting into the mouth, nose, or any broken surface of the body of an attendant, if the system has been previously prepared for the reception of the poison.

All diseases which attack the throat are not diphtheria, nor are all deposits diphtheritic, whether membranous or otherwise. This should be well understood, for even physicians sometimes call those simple affections diphtheria which arise from deranged digestion or other causes. Such looseness of definition, with the ready recovery that ensues in these simple affections, is calculated to mislead the public as to the real gravity of genuine diphtheria, and so induce a fatal indifference where there is the greatest urgency. Indeed, this disease must be carefully distinguished from all others. A condition similar to diphtheria follows scarlet fever and other diseases, but it does not constitute those diseases. Some authors consider diphtheria a form of scarlet fever without the rash, expending itself on the throat. This is not true, since scarlet fever rarely attacks the same person more than once and does not exempt one from diphtheria; while the last-named disease may occur more than once in the same patient, without in

the least acting as a protection against scarlet fever. In fact, these diseases may prevail at the same time, and the same person be attacked by one, soon followed by the other.

Again, diphtheria has been considered an aggravated form of membranous croup. As these two, when occurring in or implicating the windpipe, are quite liable to be confounded, a tabulated showing of both is here appended:

DIPHTHERIA.

1. Is a constitutional blood-disease, and depends for its existence upon a specific poison generated in the system.
2. The local manifestation in the throat is preceded by or accompanied with constitutional disturbance, as fever and general derangement of the system.
3. The exudation commences in the throat, on the tonsils, and reaches the windpipe only by extending from those parts.
4. The pain and uneasiness are first connected with the parts used in swallowing.
5. It attacks adults as well as children.
6. It is attended with great prostration and loss of strength; in adults is fatal from failure of the vital forces, and in children often by the added obstruction of the larynx, causing suffocation or paralysis.
7. The exudation is a dirty, grayish-white or yellowish color; is easily detached, the surface underneath being red but not ulcerated, and liable to bleed profusely.
8. From between the false and true membranes there exudes an offensive, sometimes bloody, discharge which imparts to the patient's breath a foul and sickening odor.
9. The glands in the throat are always enlarged, with stiffness and soreness of the neck.
10. The difficulty may extend to the nose, mouth, stomach, windpipe and the air-tubes of the lungs.
11. Is infectious and may attack whole families, or become epidemic and extend over large sections of country.

MEMBRANOUS CROUP.

1. Is a specific local inflammation, and the result of taking cold.
2. The local manifestation is not preceded by constitutional disturbance, the hoarse cough being the first symptom of the trouble.
3. The exudation is the result of the inflammation, is always found first in the windpipe and never extends above it, unless other parts are inflamed.
4. The pain and uneasiness are connected with the windpipe, causing trouble in breathing, not in swallowing.
5. Attacks children only, and rarely after ten years of age.
6. Is not attended with prostration; children often die in full strength, by suffocation, in a few hours after an attack.
7. The exudation is white or yellow, fibrinous, and cannot be detached until the disease has run its course, when it may be thrown off, in a complete cast of the tube, without bleeding.
8. The exudation is ropy, not foul, and the breath is rarely changed.
9. The glands in the throat are not swollen, and there is no obstruction to the free movement of the head and neck.
10. The difficulty never extends to the nose, mouth or stomach.
11. Is not infectious, never epidemic, and is always due to exposure to cold or changes in the atmosphere.

Diphtheria usually comes on with a chill; severe aching in the limbs, followed by high fever; flushed or pale face; swelling of the glands in the neck, with pain; swallowing is attended with much difficulty and distress; the tonsils are swollen, dark-red in color, and after a few hours are studded over with minute gray or white spots, varying in size from a millet seed to half a pea. As the disease progresses, the spots coalesce, finally covering the whole tonsil, and in some cases spreading over the entire cavity of the mouth, perhaps even extending through the nose to the nostrils. The tongue is coated with a thick, yellow-white fur; the breath is foul; the exudation from the mouth profuse; the prostration and suffering great. As the disease becomes more severe, the weakness increases; the breath is more putrid; the swallowing is more painful and difficult; the breathing becomes obstructed; the vital forces sink; there are drowsiness and delirium; the pulse becomes slow and feeble; vomiting sets in; the urine grows scanty, or is suppressed; the temperature increases; paralysis follows; and death ends the scene. This picture, happily we may say, only attends those cases which are malignant in their tendency. While the simple form may terminate in this manner it is by far the most infrequent issue, and, with the present knowledge of its treatment, the disease usually takes the more favorable course.

TREATMENT.—This should never be trusted to incompetent or inexperienced hands. We cannot condemn in too strong terms the advertised specifics or other cure-alls, and, above all, the statement which periodically appears in the papers as to the sulphur-cure, which has not a word of truth in its promises, or a single scientific reason for its assertions. It is often a source of much trouble, in delaying proper means of cure, or holding out hopes which can never be realized. Diphtheria is not a local disease, but a specific blood-poison, producing constitutional effects, and must be treated as such. Any local treatment which has for its object anything other than palliation of local pain or the insuring of cleanliness is useless and often-times productive of much harm.

Belladonna, when administered early, readily relieves mild cases, and causes the most severe types to yield. It lessens the fever, allays the pain in the head and limbs, and sometimes severe cases are very much better in a few hours after its administration. It is indicated when the throat and tongue are dry, and there is high fever, the temperature varying from 101° to 105° ; drowsiness, and starting in the sleep. Mercurius iodide has proved of much value; its indications are swelling of the glands; difficulty in swallowing; soreness and pain in the throat; foul breath. This remedy may be associated with belladonna in the commencement of the disease, alternating every one or two hours, according to the severity of the

case. When diphtheria is suspected, the best course to pursue is to give belladonna at once; and when the glands begin to swell and the spots appear in the throat, begin mercurius iodide, alternating with the belladonna, and continue their administration until the symptoms disappear, or medical aid is obtained. If these remedies do not cure the disorder, but the symptoms take on a severe type, with malignant tendency, and medical aid is not at hand, give the following:

Acidum muriaticum is needed for foul, grayish ulceration of the throat; putrid odor; great prostration; bleeding from the nose, the blood being dark and putrid; black collection on the teeth; general sinking or failing of the system. Mercurius cyanuret has produced some wonderful cures in those cases which had reached a very low state, where hope was gone and death seemed near. It is indicated by a very putrid condition, with evidence of gangrene or mortification of the parts, especially when the case is malignant in the commencement, reducing the patient suddenly, even in a few hours presenting all the putrid symptoms. Kali permanganate is useful for malignant diphtheria, with great swelling of the glands; thin, acrid discharge from the nose; the whole cavity of the throat covered with deposits; difficulty of speech; very foul breath. Give arsenicum in the last stages of the disease, when the vital forces are very low, with increasing prostration; dropsical condition of the limbs and face; foul odor from the breath; tenacious, putrid discharges from nose and mouth.

Local Treatment.—The local treatment of diphtheria is of great importance in the comfort of the patient and in disinfecting and destroying the poisonous properties of the secretions in the throat. Since much harm may be done by ill-advised measures, those means only will here be given which will accomplish the best results, a multitude which are often recommended being omitted, as liable to cause confusion and harm. Chlorate of potash is found in almost every household, and is an excellent remedy when properly used. Care should be taken not to administer it too strong, for large doses may destroy or disintegrate the blood. It should be used as a gargle, or be injected into the nose. Prepare it by dissolving a half-teaspoonful of the crystals in a teacupful of warm water; use freely, washing the mouth and throat often, and even allowing a few drops to pass into the stomach.

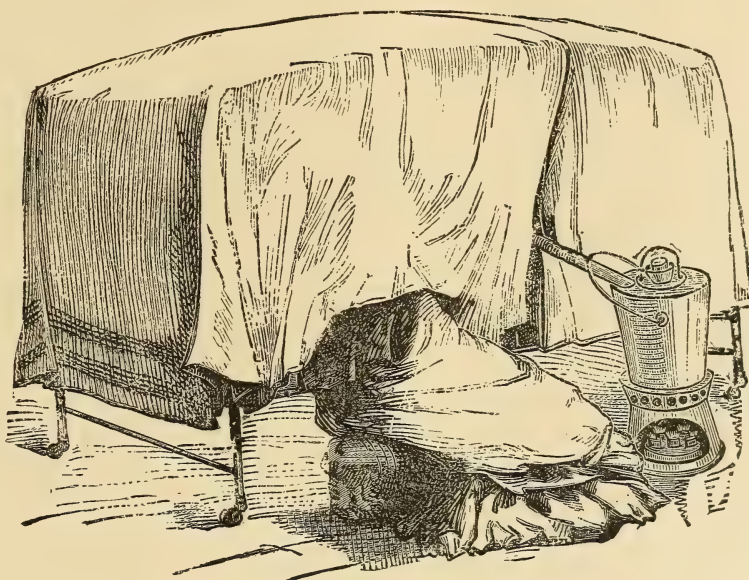
Permanganate of potash also acts well as a wash, but should be used in such cases as exhibit a putrid state, with very foul breath and dark-colored or bloody discharges from the throat. Dissolve five grains of it in four ounces of water, using it as a gargle, or forcing into the throat a spray of the solution with an atomizer.

Experience has shown that alcohol has greater power in the destruc-

tion of disease-germs than any other known means. It acts with promptness and often prevents putridity and excessive accumulation of the membranous deposit. Take one part of pure alcohol to two of water, and either use as a gargle or apply a spray with an atomizer.

Hydrastia is excellent in mild cases. Add one part of fluid hydrastia to six of water, mix well, and use freely as a gargle, having the patient swallow a few drops at the same time.

For both allaying the pain and lessening the swelling and amount of deposit, much relief may be obtained from various inhalations and vapors. The vapor of iodine is useful, and is best applied with an inhaler. If one



CHILD'S CRIB WITH A VAPOR-TENT.

is not at hand, however, it can be used in an open vessel or tea-pot as follows: Put a half-teaspoonful of the tincture of iodine in a pint of boiling water, hold the mouth over the vessel and inhale the steam—through the spout, if a tea-pot is used. The open vessel will be more convenient for use in administration to children.

Lime-vapor is also good. Make a tent or other close covering over the bed, or simply over the patient. Put into it several pieces of unslaked lime in a pan or open kettle, and pour on a sufficient amount of hot water to create a good supply of vapor for the patient to inhale, adding water or lime as needed.

The vapor of vinegar and water will afford relief. Take one part of vinegar and two of water, and inhale the vapor as directed for iodine; or put on the stove or over a lamp an open vessel containing the solution and fill the room with the steam that arises when it boils.

Among external applications which will effect good results is the common kerosene oil. This is efficacious if applied with caution, and in such a way as not to produce a blister. The best preparation is made of two parts of kerosene oil, and one part of peppermint oil, well mixed; bathe the throat with it and rub with the hand until dry; then apply a layer of cotton batting, with thicknesses of flannel over it to keep it in place. This may be repeated in from twelve to twenty-four hours.

A piece of fat bacon applied to the throat is a household remedy, and a good one. It should be cut thin, be attached to a piece of flannel, and be bound on the neck so as to cover the glands which are swollen. The practice of putting on black pepper, resorted to in home treatment, can not be indorsed, for it is liable to produce a blister and is productive of no benefit.

The surface of the body should be frequently bathed. This reduces the heat, opens the pores, and thus allows the poison in the blood to be thrown off. Water internally should be allowed freely; and if there be great swelling and soreness of the throat, or excessive vomiting, small pieces of ice may be dissolved on the tongue.

The almost certain failure of any good results from opening the wind-pipe in diphtheria, and the added suffering which is inevitable, lead us to speak against it. It is rarely the case that the deposit forms in the wind-pipe without extending down into the bronchi, or air-tubes; and when the latter condition exists and can be determined before the operation, the opening should certainly not be made, for failure must follow and the last chance of recovery be lost.

Diet.—The great prostration which immediately follows an attack of this disease calls for every effort to sustain the sinking powers. The patient should be urged to take an abundance of nourishment, although it may occasion distress in swallowing. This does not consist in cramming the stomach with food and drink, but in the frequent use of some highly nourishing diet. Of those articles which are most useful, we may mention the essences of the various meats, as beef, mutton, chicken and venison. Milk, wine-whey and milk-punch are also excellent. To prepare the last, take of fresh, sweet cream one-half teacupful, and brandy one tablespoonful; pour into this three tablespoonfuls of good coffee, and sweeten to taste. Give two teaspoonfuls every two hours. In place of the coffee, hot water or milk may be used, if desired. Serve cold or hot, as is most grateful. Eggs, sweet bread, isinglass, and all articles that contain a large amount of

albumen, should be avoided, as also oysters, clams, lobsters, and other shell-fish. As soon as the patient desires it, fruit may be allowed in moderation, and may include grapes, oranges, and cooked fruits, such as baked apples, stewed plums and nectarines.

The articles used in nursing the patient should be such as can be destroyed, as far as possible, when the disease has spent its force. All superfluous articles of furniture and hangings should be removed; the bed should be changed every day and the strictest cleanliness be observed. Make the room light and airy, ventilating well, and when the weather is cool, warm the apartment so as to be comfortable. The best plan is to have a thermometer in the room and keep as even a temperature as possible, at about 70° F. The nurse should be kind, but firm, and insist on using all needful measures, even if disagreeable to the patient.

SCARLET RASH.

This is a distinct disease, not a mild form of scarlet fever, as many suppose who call it scarlatina, thinking that this term means a slight attack of the latter disease. Scarlet rash has many features which are peculiar to itself, and differs from scarlet fever in the following particulars: The eruption is dark-red or purple in hue, and does not present that bright-red glow which is so characteristic of scarlet fever. The skin does not turn white on pressure of the finger, as in scarlet fever. In the latter disease, the surface of the body is smooth and glossy, while in scarlet rash the hand passed over the surface will detect small elevations under the skin, feeling like the skin when covered with "goose-flesh."

The fever is irregular in its course, and is not always present; the throat is usually sore, and there is often canker in the mouth. The disease is not contagious, and is due in most cases to atmospheric influences.

TREATMENT.—Aconite stands in the same relation to this disease as belladonna sustains to scarlet fever (see above under that disease), and is usually all that is required. Coffea is useful when there is wakefulness, and may be given in alternation with aconite. The same rules for the general care as were given for scarlet fever should be followed, and the diet should, in all cases, be plain and light.

NETTLE RASH.—HIVES.

This troublesome, and often quite serious, disorder is an eruption on the skin, like that produced by the nettle, consisting of elevations irregular in size and shape, either white or slightly red, and having the peculiar characteristic of changing from one place to another, coming out suddenly

with excessive itching and burning, and as suddenly going away, leaving no trace of their presence. It is due to some derangement of either the stomach or liver, and is usually the result of eating irritating, indigestible food, as sausage, fat meats, spices, shell-fish, oysters, lobsters, and the like. The first appearance of the eruption is accompanied with heat, swelling and slight fever. Sometimes it suddenly recedes from the surface and causes suffocation, nausea and vomiting, or excessive pain in the stomach.

TREATMENT.—In the treatment attention should be paid to re-establishing a healthy tone of the affected organs in which the disorder has arisen, and this will generally be all that is necessary. To effect this, strict attention should be given to the diet, all articles liable to disturb the digestive functions being avoided. Among remedies, *rus* will control most cases. *Apis* is better when the eruptions look like bee-stings, with much swelling, and when the eyelids present a puffed and swollen appearance. *Nux vomica* is needed when there is derangement of the stomach or constipation. *Pulsatilla*, when the rash results from eating fat meats, or occurs during the menstrual flow.

Great relief is often obtained by a general warm bath in soda-water. It soothes the skin and relieves at once. Smearing the eruption with smoke-cured bacon, or rubbing the parts with slices of lemon, also acts as a palliative for the itching and burning. Exercise in the open air, cleanliness, and the avoidance of draughts should be insured. If flannel is worn, it should be kept away from the skin by linen or cotton garments.

ERYSIPELAS.—ST. ANTHONY'S FIRE.

The constitutional disturbance produced by this disease, which has the characteristics of other febrile diseases, places it among the blood diseases and under the head of fevers, though, from the phenomena existing on the skin, it might be considered a local and cutaneous disease.

It is not generally considered contagious or even infectious, although it displays the peculiarity of reappearing in those who have once had it, if they are exposed to its influence. There are two varieties; simple erysipelas, affecting the skin; or phlegmonous erysipelas, affecting the cellular tissues. The causes of the disorder are varied, but as a rule it is ultimately due to a low state of the vital forces. Some of the special or direct causes are cold from exposure, impaired digestion, wounds, badly ventilated and overcrowded apartments, atmospheric influences, and the habitual use of stimulants. *Arnica*, incautiously used, has been known to induce it.

An attack is ushered in by the ordinary symptoms of fever, as chilliness, languor, headache, nausea, and sometimes vomiting. Local inflamma-

tion sets in, usually on the face, in simple erysipelas commencing on one side of the nose and spreading gradually over that side of the face, extending to the scalp and neck, and thus, unless arrested, going to the other side; the line of demarkation often being so plain that it can be distinctly seen running up the center of the nose, forehead and scalp, presenting a very peculiar appearance. The skin is red and slightly elevated, so that the outer line of the diseased surface can be distinctly felt. The swelling is very great at times, and, in the phlegmonous form, may obliterate the features entirely. Blisters often form and break, discharging their contents, and resulting in thick scales or scabs, which come off after the disease has run its course, leaving the surface red and smooth. There is a burning pain, the surface is sensitive to the touch, and, in the phlegmonous form, often leaves deep pitting on pressure. In this form of the disease, the surface is very dark red, or even of a purple hue. There is often delirium, especially when the disease attacks the face and head. It is a very serious disorder, and often proves fatal, particularly when occurring in hospitals, camps, and like places.

TREATMENT.—Belladonna is indicated by bright-red inflammation; swelling without the formation of blisters; headache; thirst; brownish-red, thick urine; it is especially useful when inflammation extends to the head, causing delirium, lethargy, or twitching of the limbs. Give bryonia when the joints are affected with pain on motion. Rhus has great influence over the disease in any of its forms, but is especially adapted to cases which are characterized by blisters, on whatever part of the body it is located, and is needed when there is great thirst, with a dry, brown-coated tongue. *Veratrum viride* is also suited to cases which present blisters, if there be great fever and delirium; and it may also be used externally in a lotion, one part of the tincture to four of water, applied with linen cloths saturated with it. *Apis* is needed for great swelling, with a dropsical appearance of the affected parts, and scanty urine. Give *arsenicum* if the disease assumes a low form, evincing a gangrenous character, coming out in patches and producing great prostration.

In mild cases of skin-erysipelas no external applications are needed. Dusting the diseased parts with wheat flour, to allay the itching and burning, and to protect them from the air, is all that is required. Indeed, the application of flour is very grateful in any case. A lotion of carbolic acid, if properly applied, gives great relief. A good formula is here appended:

Carbolic acid,	½ drachm.
Glycerine, pure,	2 ounces.

Mix.

Put two teaspoonfuls of this mixture in a teacupful of sweet milk, and bathe the parts freely with it.

In the deep-seated form of this disease, if pus or matter forms, incisions should be made to give free openings for its discharge. The parts should be firmly bandaged, in order to reduce the swelling and force the matter toward the openings. Pressure seems to retard the spread of the disease, and many times, if so located as to afford the opportunity, strips of adhesive plaster, applied along the margin and lapping over the healthy skin, will prevent its further progress.

The diet should be light and easily digested, with a free use of water to allay the thirst. In severe cases, with great prostration, meat extracts and stimulants should be used. Milk-punch with brandy will be found of great value in sustaining the vital forces, and, in some places, the following may be found necessary to bridge over a trying time:

Quinia sulphate,	30 grains.
Muriate tincture of iron,	2 drachms.
Simple syrup,	4 ounces.

Mix. The dose is one teaspoonful every four hours.

The body should be protected from draughts of air, and, in all cases, the room should be well ventilated, and a cheerful frame of mind be maintained. This disorder should, however, under no circumstances, be left to unskilled hands. The many sudden changes which may attend even an apparently mild case necessitate the attention of most skilled aid.

RHEUMATISM.

This disease is both acute and chronic. It may come on with violent inflammation, with all the symptoms of fever and chill, and with a local manifestation, such as swelling, heat and pain; or it may be free from these inflammatory indications, but be attended with stiffness, pain in the tissues, and loss of muscular power in the parts affected. Under any circumstances, it is accompanied by much pain and inconvenience, and oftentimes a good deal of danger. No portion of the body is exempt from its influence, and this general character has led to the use of various names, according to the locality in which it is seated. For example, we have "arthritic rheumatism," when it is in the joints; "pleurodynia," when in the chest; "cardiac rheumatism," when in the heart; "sciatica," when in the sciatic nerve; "muscular rheumatism," when in the tissues of the muscles, or in the membranes which cover them. Besides, there is rheumatism of the head, of the stomach, and of other special organs. It is unnecessary to go into further details, as they all originate in the same condition of the blood, and are dependent on much the same state of the system, the only essential difference being between the acute and chronic forms.

Opinions differ widely as to the nature of the condition which gives rise to a disease that takes so wide a range in its places of attack. Some suppose that it is an alkaline state of the blood, resulting from an excessive discharge of the acids through the skin, as indicated by the copious sour sweat. They therefore saturate the system with acids to make up the loss. Others believe that there is an excess of acids, and give alkalies to counteract them. All opinions have their supporters, and yet few other diseases present such a formidable front to treatment, or subject the sufferer to so many disappointments. This shows that the promises of the innumerable specifics which are advertised so widely are false; yet few disorders are so much treated with such worthless nostrums and liniments as the one now under consideration.

ACUTE OR INFLAMMATORY RHEUMATISM.

This form usually comes on like an ordinary fever, with severe local inflammation of the fibrous structure of the larger joints, especially of those which are most exposed, or those which have been strained at some time. The tissues swell, are hot, sometimes very red, and extremely painful when moved or touched. The local trouble may be confined to one or two joints for a time, and then suddenly change to another locality, the part before affected being relieved from pain and soreness, though still weak and deprived of muscular power. Again, a large portion of the body may become affected at once, robbing the patient of the power of motion, and often making it necessary to change his position by lifting him on a sheet. The pain is quite inclined to become intermittent, being at times exceedingly severe, then giving place to a period of ease, though it is usually worse at night. The skin is hot and generally covered with a profuse, sour, offensive sweat, so highly acid as to redden litmus paper upon a test. The sweating often mitigates the pain, and may be considered nature's mode of eliminating the poison. The urine is scanty and dark-colored, with a large deposit of reddish sediment, and has a high specific gravity. The tongue is coated with a thick, yellowish, or dirty-white fur; and there is great thirst, with full pulse and higher temperature than is normal.

One of the peculiar characteristics of rheumatism, often attended with much danger, is the erratic nature noted above. In its shifting from one part to another it has a peculiar tendency to attack the heart and its covering, especially if this organ has been the seat of irritability from functional or organic disorder. This complication is readily detected by the anxious expression of the countenance, and by the obstructed, spasmodic breathing which results from the severe pain. This course of the disease is a serious one, and is always attended with some derangement of the heart, the traces

remaining to appear at some future time in organic disease of that organ. The extreme danger in any implication of the heart demands for this form of rheumatism the best aid and most assiduous care of a skilled physician.

That the predisposing cause of the disease is some disorder of the blood there can be little doubt, and we may reasonably believe that, without this condition, rheumatism would not occur. The exciting causes are exposure to cold and wet; evaporation from wet clothing, causing chill; sudden arrest of secretions of the skin; abrupt suppression of dysentery, or of eruptions attending some fevers; the retrocession or "striking in" of skin diseases; a low state of the system, rendering the patient unable to resist attacks.

Muscular rheumatism may or may not be attended with inflammatory symptoms. It affects the structure and the sheaths of the muscles. When it settles in the back, its favorite locality, it is called lumbago; if in the neck, it is known as crick in the neck; if in the thigh, following the track of the sciatic nerve, it is sciatica.

TREATMENT.—So far as the accessory means are concerned, the treatment is substantially the same for all forms. Reference will be made to the several remedies here named according to the locality to which they are best adapted. There is so much suffering in this disease that opportunity is given for the application of any number of liniments, lotions, and other preparations of a like character. As they all have their sphere of action, and have much the same effect, we refer the reader to the index for directions to the formulæ for their preparation, as given in another chapter.

In the accessory treatment, warmth, protection from the air, promotion of the free action of the skin, and the reduction of the excessive heat are to be attained as far as possible. If these ends be gained, very much has been done to relieve the sufferer. After rubbing well with such liniments as may be chosen, the parts affected should be covered with a thick layer of dry cotton batting, selected with care so as to avoid that which is unclean, coarse, or filled with knots or other irritating matter. The cotton should extend beyond the limit of the affection, and be held in place with a covering of oil-silk or cloth. This dressing not only protects the inflamed surface from the air and keeps the temperature even, but also produces a cooling sensation by its conducting properties.

Strapping with adhesive plaster often produces relief, for physiological reasons that may be easily understood. When the capillaries are engorged, the firm and even pressure forces the blood out of them and relieves the pain; when the joints are affected, it causes absorption of the fluids deposited; when the knee is the seat of trouble, the straps prevent chronic enlargement, in addition to relieving the pain; in lumbago, they are specially use-

ful, as they sustain the back and, to a considerable extent, prevent the contraction of the muscles, thus affording much relief. In the form last named, they should be extended, in parallel strips across the back, from the buttocks up the back to a point above the seat of pain, one layer being put upon another, each lapping over the upper edge of the one beneath it, and reaching out on the skin. The best plaster is that which is applied with heat, and it should be drawn firmly and evenly over the affected parts.

Water-dressing, such as packs, compresses, Turkish, electric, vapor and other baths, hot and cold, has proved to be a valuable adjunct, but should be under the direction of a skilled attendant. Enveloping the patient in woolen blankets lessens the tendency to heart-complication, and hastens the cure.

Aconite is needed in the inflammatory stage, for high fever; full and bounding pulse; shooting, tearing pains, worse at night and when moved or touched; swelling and redness of the parts; loss of appetite; colored urine. Bryonia is indicated by sharp, stitching pains in the muscles, worse when there is the least movement; fever; white-coated tongue; deranged stomach; profuse sweating, with coldness and shivering when the coverings are moved. It is especially useful in rheumatism of the shoulder and chest, and when the organs of the chest and the membranes surrounding them are affected. Belladonna, though not having a wide sphere of action in rheumatism, has great influence when the head is involved, with flushed and swollen face, red and painful eyeballs, and a feeling in the whole head as if it would burst. It is efficacious in rheumatic fever, when the congestion and fever are the most prominent symptoms; also for pain seated in the bones; intense pain in the back; lumbago. Rhus has great virtue, and may be used with profit in both the acute and the chronic forms. It is especially useful when the pain is of a drawing, tearing nature, accompanied with a sense of lameness that affects the muscles, worse during rest and relieved by motion. It thus applies particularly to sciatica, and is adapted to cases caused by cold, exposure in wet or damp weather, bathing or straining. Give *cactus grandiflorus* when the heart is implicated, with a sense of constriction, as if it were encircled with a band. Arnica is needed for tearing pain; swelling in the parts, with much soreness and numbness; great dread of being touched; the bed feels hard; pressing pain in the left side, increased when drawing a long breath. Arsenicum applies to cases that are attended with profuse sweating which leaves the patient weak and prostrated, even if the pain is relieved; stinging, burning, intermittent pain that is apt to be worse every second day; swelling joints, with a pale, puffy appearance; pain relieved by heat and movement of the affected member. *Caulophyllum* is useful for rheumatism in the joints of the hands, wrists and feet, with spasmodic pain which causes rigidity of the

muscles and is inclined to shift from the extremities to the back. Cimicifuga is an excellent remedy for rheumatism which affects the right side of the chest, the joints and the back; also when the pain is worse on motion, and there are great heat and swelling in the affected parts. Colchicum is indicated by wandering or shifting rheumatism, with a tendency to locate in the chest and heart; deranged condition of the stomach; burning and tearing pains; affected parts usually not swollen, but sometimes showing a pale swelling; constant chilliness, with flushes of heat. Digitalis is more particularly suited to cases with heart-complications; small pulse, easily affected by motion, the latter causing strong pulsations; hurried and labored breathing; also in cases with urinary complications, when the secretions are almost entirely suppressed; general paleness of the body, the joints being swollen, white and shiny. Give three to five drops of it every one, two or four hours. Many speedy cures have been made with mercurius. It is especially useful if there is a taint of blood or heredity which furnishes a predisposition to the disease. The symptoms indicating it are very high fever; full, quick pulse; profuse sweating, which has a musty smell; parts not much swollen but exceedingly painful and usually very red, a condition which, with a throbbing, deep-seated pain, gives rise to an apprehension of the formation of pus in the joints; much gastric derangement; thick, yellow coating on the tongue; foul breath; no appetite, food of all kinds causing nausea; great thirst.

Persons suffering from acute rheumatism usually have little desire for food, and should take but little during the inflammatory stage. The diet should consist of milk and water gruel, light broths, arrowroot, and, as the fever lessens, broths of mutton and beef. As convalescence progresses, a more liberal diet should be used. The practice of excluding all articles of a nitrogenous character is not attended with good results, as it lessens the heart's action by cutting off the supply of those substances which tend to build up the muscular system. Water should be used freely, because of the great thirst and free perspiration. It lessens the temperature and promotes sweating, thus carrying off through the skin the poisonous matter in the blood.

CHRONIC RHEUMATISM.

This differs quite materially from the acute form, though it may be a sequel of it. It is an independent disease, usually without any previous inflammatory attack, is the result of some specific condition of its own, and has results peculiar to itself. It consists in a chronic pain, with stiffness, sometimes swelling, and often distortion, of the joints, especially those of the fingers. It is very obstinate, and when it gives the sufferer a

short respite, it soon returns, often more severe and more stubborn than before. This continued recurrence finally causes loss of power in the affected parts, and constant lameness is the result; or the muscles become shrunk and the ligaments contracted; or a bony stiffness of the joint follows. There is little fever or swelling, and no sweating. A low state of the system, with weak digestive powers, usually exists, and many times the correction of a dyspeptic condition has produced prompt relief from rheumatism. This should always be considered, and such means be used as will tend to build up the system, and insure a healthy assimilation of food.

TREATMENT.—The accessory measures, and the indications for the use of bryonia, rhus, mercurius and cimicifuga, all useful in chronic rheumatism, are detailed above under the acute type. The medicines given below are especially adapted to chronic cases.

Iodide of potash is of the utmost value, since it is suited to the removal of the blood-taints which are often the origin of chronic rheumatism. The special indications for its use are chronic enlargement of the glands; stiffness and immobility of the joints; distortion and inversion of the fingers and hands; great pain from motion, if it be the least irregular; intense pain in the back upon attempting to rise after sitting or lying down. *Phytolacca*, under the name of poke-root, has long had a reputation in the domestic treatment of rheumatism. It is often used in the acute form, but is particularly valuable in the chronic type when the disease affects the back, hip-joint, and the sheath covering the bones, the pain being heavy, aching, and worse in damp weather, and during the night; also when the glandular system is involved, with swelling under the arms and in the neck. Sulphur has a remarkable efficacy when acute rheumatism shows evidence of recurrence, and when traces or symptoms remain in spite of other remedies. In chronic rheumatism, it has done more than any other remedy, as is shown by the numerous cures which are made every year by the various sulphur springs. When rheumatism follows suppressed eruptions, or when the pains are drawing, tearing, worse from cold, and relieved by warmth, this remedy is especially efficacious.

The diet in chronic rheumatism should be nourishing and easily digested, all articles having a decidedly injurious effect which tend to derange the stomach, such as fat and grease. Acid materials, especially cooked fruits, limes and lemons, may be used with profit. Hot sulphur baths, Turkish baths, and sea-bathing are often highly beneficial, but should be used under competent advice, and this remark will apply equally well to the various hot springs.

DROPSY.

This consists in an accumulation of fluids, of a serous or watery character, in various portions of the body. It is found in the cellular tissue underneath the skin and surrounding the muscles, and in the serous cavities. It is not, strictly speaking, a disease, but is rather a result of certain disordered conditions, and may arise from a great variety of causes.

When the deposit occurs in the cellular tissue, the parts have a doughy feeling, and, when they are pressed upon, the indentations remain some time; the surface is usually white and waxy in appearance and feels cold. In chronic cases, when the swelling is great, the skin becomes very tense and smooth, and has a glassy, dull-red aspect. In the lower limbs it is liable to break through the skin, thus allowing the fluid to escape, and gangrenous sloughs may form. Cellular dropsy is quite liable to be general in its character, commencing in the lower limbs, and, if unchecked, extending over the body. This form is called anasarca.

When dropsy locates in the abdomen, it is known as ascites. This part of the body often becomes enormously distended, and, from the pressure of the accumulated fluid, causes great distress in breathing, especially when lying down. It is due to obstructed circulation, to enlarged spleen, and other causes.

When the accumulation of the fluid takes place in the chest, it is known as hydrothorax, or dropsy of the chest, and is usually the result of inflammation of the lining membranes of the chest, or the organs contained therein.

When dropsy has its seat in the head, it is called hydrocephalus, and may exist at birth or arise from the various inflammations of the brain and its coverings.

As dropsy is treated under the different diseases of which it is a sequence, we will speak of it here only in general terms, giving the remedies and hygienic treatment which apply to dropsy as a whole, and to its prevention. When not the result of inflammation of the different serous cavities, or the organs contained therein, this disorder arises from impeded circulation of the blood in the capillaries, due to any of the following conditions:

1. A poor, watery, exhausted condition of the blood.
2. The presence in the blood of matter which should have been eliminated, or of other noxious material.
3. The obstruction to the free passage of the blood through one or more of the great organs of the circulation, as the heart, lungs, or liver.

Thus, from the improper assimilation of the food, or from great loss in blood-letting or other hemorrhage, the blood becomes deficient in red corpuscles and abounds in white, colorless cells which, being larger than the red corpuscles, adhere to the walls of the vessels, obstructing the free passage of the blood and causing an exudation of serum through the walls into the tissues surrounding them. This is more especially the case in those parts most remote from the heart, and less under the influence of its feeble action.

It is now generally conceded that, in the various blood diseases, the capillary circulation becomes obstructed by the presence of morbid products. When this takes place, or the blood is rendered unfit for the process of nutrition or secretion, a stagnation in its passage through the capillaries is indicated in the visible functions, as well as in the nutrition of the organs and tissues, especially the heart, the action of which becomes quickened and more laborious in its efforts to force the blood through the sluggish and congested vessels. Among the diseases giving rise to this condition are scarlet fever and Bright's Disease of the kidneys, the dropsy in both cases resulting from the presence in the blood of portions of the poison which obstructs the capillary circulation in the kidneys and the general circulation. Other exciting causes are those diseases which tend to depreciate the quality of the blood, as consumption, chronic diseases of the liver, chronic diarrhœa, and severe hemorrhage during child-birth. Again, as said above, the condition may arise from obstruction of the current of the blood through the heart, lungs and liver, the cause in this instance being mechanical in its character. In this last division, the primary obstruction may be in the heart; or it may be in the lungs, and the secondary in the heart, from the various diseases of the lungs. Either of these may produce dilatation and deficient action in the right side of the heart, with a backing up of the blood in the venous system, resulting in dropsy in the extremities which finally extends to the entire body. The liver may become the seat of obstruction, by disease or enlargement of this organ which blocks up the circulation, and, as in the heart, returns its effects back to the remotest part of the venous system, engorges the capillaries, and is followed by dropsy in the abdomen.

TREATMENT.—There are so many conditions of the system that may produce dropsy, and the successful treatment depends so much on the knowledge of the individual condition or cause, that it is necessary to consult some one who has had experience in the treatment of the disease. We advise an early application to such aid. The diet is an important matter, and should be of such a nature as to require the least labor on the part of the digestive functions, while possessing the best nutritive properties. Water may be used freely, not only to quench the thirst that often occurs,

but also because of its action on the fluids of the body, by which they are more freely cast off. The old theory that water increases the dropsy, and hence should not be taken, is false, as it is known to have an opposite effect, the amount of fluids secreted being greater than those taken. It also strengthens the pulse, and improves the appetite. Baths, both hot and cold, are excellent helps, but should be under the direction of a physician, for much harm might arise from their injudicious use. Tapping the cavities to draw off the fluids is sometimes resorted to, in order to give relief from the suffering, but can result only in temporary help. Since the cause still exists, the cavity soon fills again, and the patient is weaker therefrom. However, it may be at times a great boon to the poor sufferer.

Arsenicum is a most useful remedy in this disease, both local and general. It is indicated by great debility, loss of flesh and general weakness; oppression of the breath when lying down; the skin dry and pale; the tongue red and parched; the pulse feeble and irregular; the extremities cold; excessive burning thirst; scanty urine. Give digitalis when dropsy arises from heart or kidney trouble. It is indicated when the pulse is small, feeble and irregular; face pale; lips purple; breathing difficult; urine scanty; inability to lie on the back. Apis, from its powerful action on the kidneys, is very useful in cases of dropsy arising from a severe chill, scarlet fever, and incipient Bright's Disease, and in those occurring in pregnant women. It is especially useful when the dropsy is complicated with suppression of the urine, difficult urination, and other urinary disorders. Bryonia is needed in dropsy of the chest, or of the joints, and when sudden checking of perspiration or disorder of the liver is the cause.

A warm, dry atmosphere is the best for dropsical patients, and, if the disease arises from the influence of a damp or malarious climate, a change may be necessary.

SCROFULA.

This is a constitutional disease resulting from deranged nutrition, and manifesting itself especially in the lymphatics. It is more commonly marked by a hardening and enlargement of the glands of the neck, jaws, arm pits and groins, but is not confined to these parts. The swellings are at first soft and painless, but afterward become larger and inflamed, and often form suppurating ulcers. Colds, measles, scarlet fever and other diseases, as is well known, often affect the lymphatic glands, even in constitutions that have previously been in general good health. They also excite to open manifestation any scrofulous taints that a child may have had at birth. Other symptoms in this type or stage are discharges from the eyes, nose and ears; thickened upper lip; swollen abdomen; swelling and caries

of the bones; hip-joint disease; white-swellings; hydrocephalus; convulsions of infants; disorders of teething; diseases of the breasts and testicles; and general affections of the skin.

But these external enlargements and sores are not the only marks of the disease, though they are more frequently the visible symptoms in young children. Tuberculous deposits are very often engendered in the internal organs, as the stomach, liver, intestines, brain, heart and lungs, such a condition being the more common form of scrofula in youth and later periods of life. Indeed, it is very frequently the case that the external symptoms seen in children abate about the age of puberty, and if the malady does not then leave the system, it will fasten upon these internal parts—a fact which will explain why so many who were scrofulous in early life are consumptive in later years.

There is no doubt that hereditary tendency is the most prolific source of scrofula. Yet, even in those who have no congenital taint, the disease may be developed by any influences which derange nutrition and keep down the general tone of the system for a considerable time. Impure air has a remarkable tendency to excite it, and we consequently find that it is very common among school children who are kept in poorly-ventilated rooms, and among all classes who live or work in quarters where pure air is not afforded. The absence of sunlight is another condition favorable to scrofula, and hence it is more frequent in crowded cities than in the open country. Nor is a poor or deficient diet less potent in exciting the disease. It is very generally claimed that the use of the hog as meat is peculiarly favorable to the production of scrofula, and the milk of scrofulous cows—for very many cattle are affected with scrofula—will engender the disease in those who have no congenital taint, and readily arouse it in those who are predisposed by nature. It may, therefore, be briefly said that scrofula results from heredity, improper diet, impure air, want of sunlight, uncleanness of apartments and the person, and, in general, from anything that will keep down the tone of the system, as poverty, indolent habits, insufficient clothing, exposure to damp and cold, and mental depression.

It has been well said that almost all ills of the human frame which are not well understood are loosely called scrofula by the general public, and too often by physicians. This goes to show what an indefinite meaning the term has. It is deserving of special note that many cases of so-called scrofula are only manifestations of syphilis, either from direct contagion or more remotely from one's ancestry, and that it is often very difficult to distinguish a syphilitic poison from real scrofula.

TREATMENT.—It is obvious, from the lack of a limit to the definition of this disease, that each case must have a treatment of its own, and this

makes impracticable any detailed directions applicable to all cases. A skillful physician should always be consulted, so that an intelligent inquiry may be made into the family history of the patient, and into his habits, surroundings, and mode of life. There are few cases, however, which will not be benefited by avoiding the exciting causes mentioned above, in diet, air, sunlight, living apartments, and general habits of life. An abundance of pure air, direct sunlight, wholesome diet, open-air exercise, comfortable clothes (flannels being best worn the year round, the weight being regulated by the season), should be provided, whatever be the pains and cost. Without such measures, medicines will be of little benefit. Indeed, no remarkable results have been attained by any remedies. Cod-liver oil has been much praised and very extensively used, but it has been much abused, and has caused no little injury. It is doubtless useful in sustaining the strength and meeting the loss of flesh which many cases, not all, suffer; but its use is manifestly not wise where such a condition does not exist. Yet, we see it recommended for scrofula without discrimination, and patients are often put into a fatty, flabby, puffed habit, which can not be favorable to a normal action of the lymphatics. A somewhat similar remark may be made on the alleged specific properties of iodine as a remedy. It is not intended to say that these expedients, and others which are so cordially recommended, have no efficacy. They undoubtedly have some merit, but only a trial, under the direction of competent advice, can determine whether they are beneficial in any given case. On general principles, baths may be confidently recommended, since they promote a normal action of the functions of the skin and nutrition. It is better to put sea-salt in the water. Cold baths have been too indiscriminately prescribed. If the patient experiences a sense of warmth and comfort a few minutes after a cold bath, it is good for him; but the temperature of the water should be raised if he remains chilly after one. Experience must determine how often the bath is to be taken; one every day proves too debilitating for some.

It is in infancy that the best results are obtained from hygiene and care, before the disease has firmly fastened itself upon the system. Indeed, back of this rests a responsibility. Those of a scrofulous tendency can not assume the place of parents with any hope of healthy offspring, especially in the absence of the greatest pains to correct the tendency in themselves and their children. It ought to be unnecessary to give a caution about marriage when the prospective husband and wife are both scrofulous. Whether there is a taint of the disease in a babe or not, the general measures above given on health should be observed. Other essentials, particularly adapted to children, are given in another chapter. If the mother is scrofulous, and especially if she has any derangement of lactation, a healthy wet-nurse,

of good family history as to health, should be secured. It should be particularly noted that, when cow's milk is to be given, it should be known that the cow is not scrofulous. It is claimed that children whose mothers are troubled with leucorrhœa are specially subject to this disease. At any rate, it will be a commendable prudence for every young mother who suffers from this, or other vaginal or uterine disorder, to take medical advice as to nursing her babe.

GOITRE.—BRONCHOCELE.

This is an enlargement of a gland of the larynx which produces a greater or less swelling in the front part and side of the neck. Though its seat is in the larynx, it is of a constitutional character. Opinions differ widely as to its origin, some claiming that it is caused by the kind of drinking-water used; others, that it is due to the climate and locality, since it prevails most in some mountainous countries; still others, that it is inherited; but we simply say we do not know. Generally the swelling causes no pain and little inconvenience, though the deformity is always a source of embarrassment. Sometimes, however, the tumor becomes inflamed, painful, and assumes a red, shiny appearance, instead of the normal color of the skin which usually exists. The last condition is more common in scrofulous people. At the age of puberty the neck of females becomes fuller, as a natural condition. At such a time, the thyroid gland may become inflamed and lead to goitre. If, therefore, the neck becomes much enlarged during this period, it will be advisable to take precautions against the disease, by resorting to the measures here recommended, and consulting a physician.

TREATMENT.—There can be little doubt that very many cases are benefited by a removal from the locality in which the disorder has developed. A dwelling on the coast and sea-bathing will be of much service in most instances. The painting of the tumor with iodine has been attended with excellent results. Iodine can also be taken internally with superior effects. A simple but efficacious remedy is this: Brown or roast a piece of new, well washed sponge until it can be pulverized in the fingers, and do the same with egg-shells; take equal parts of these and thoroughly pulverize them together, using a dose of five grains of the mixture three times a day. Mercurius iodide is recommended if the tumor increases in spite of the means given above. Calcareo carbonica is indicated if the goitrous person is also scrofulous.

The patient should keep the general health as good as possible, lest the tumor be enlarged, and for the same reason should avoid labor which will keep the neck in a strained position. Uterine difficulties and labor aggravate the tendency to goitre.

RICKETS.

This is a constitutional disease of early childhood, resulting from deranged nutrition, which produces dreadful organic changes in the bones and, unless radically treated, leaves the sufferer hopelessly deformed for life. It arises from any influences which impair the nutritive process, as lack of pure air and sunlight, improper diet, damp, cold, uncleanness, too close confinement generally, ill-health or constitutional weakness of the mother, with the consequent deterioration of the milk of the breast; even if the parents be healthy, they may induce rickets in their offspring by neglecting to observe for themselves the proper laws of hygiene, as to food, air, sunlight, exercise, clothing, ventilation, and the like. Giving the child sweetmeats, and such foods as only adults should eat, is a prolific source of the disorder.

Among the first symptoms, even in the early days of infancy, will be profuse perspiration of the head, neck and chest, with heat and dryness of the abdomen and lower limbs, the child often persisting in throwing off the covering at night. After a time, there will be much tenderness and dread of motion or disturbance, with a disposition to be quiet and alone; the appetite generally becomes voracious, but the food is hurried along, and is passed off only partially digested, the discharges being very offensive. The bowels are alternately loose and constipated. The child grows dull, and usually becomes thin, though sometimes it is plump, and its flesh is soft. There is drowsiness during the day, and restlessness at night. About the time the tenderness appears, the changes in the bones begin. In a mild case, there will be delay in the closing of the joints in the skull, and in the appearance of the teeth, the ankles being a little sunken, the shin bent, and the spine curved. In worse cases, these symptoms will exist, with more radical changes. The skull is larger than normal, and, instead of its arched form, becomes flat on the top and sides, the natural protuberances on the forehead and sides being increased, and the seams being slow in closing. The face is misshapen, small and triangular, the chin being sharp, and the teeth projecting, with a tendency to fall out or decay. The chest is narrow and prominent in front ("pigeon-breast"), while the abdomen is often large in proportion. The spine is curved in either of various ways, the pelvis is narrow and deformed, making pregnancy in later life perilous. The ends of the ribs, and of the bones at the ankles and wrists, become swollen and knotted, this being often noticeable in the ribs in an early stage. The contracted chest interferes with breathing. The digestion is impaired after a while; the urine deposits a white sediment; the bones become soft and bend in many ways, until the child is shockingly deformed. If the disease is not eradicated before the fifth or sixth year, the deformity will continue until

death. If rickets appears shortly after birth, it will usually be fatal; but if it comes on at a later period, it is very often treated with gratifying success, although more or less deformity sometimes remains. If a child which appears to enjoy fair health cannot walk at the age of eighteen months, or if the ninth month passes before a tooth appears, there is a suspicion of approaching rickets.

TREATMENT.—From what has been said on the causes of rickets, it is evident that treatment consists largely in proper care. If the child has been delicate from birth, if there is fear of the disease while the mother continues nursing the babe, or if any of her family have been affected by rickets, medical advice should be sought to see if it is not better to secure a healthy wet-nurse. At any rate, the child should have an abundance of pure air and sunlight—preferably in the country—and be warmly clad. When indoors, the apartments should give free access to the sunlight and air. The food should be nourishing and consist of milk, meat, animal broths, and cod-liver oil. The last must not be given in such quantities as to create disgust or to pass in the evacuations of the bowels in such amounts as to impart to them its odor. Give ten to twenty drops at first, and gradually increase to a half-teaspoonful. Care must be taken to have the food easily digested; if the teeth are not good enough to effect perfect mastication, the food should be finely pounded.

A tepid or cold bath, according as experience shall dictate, should be given daily, sea-salt being put in the water, followed by brisk rubbing with a towel and a warm hand. It is better to give this in the morning, though the rubbing should be applied in the evening also, the limbs receiving special attention at both times.

The above measures can always be used, even in the absence of a physician, but that can be no ground for failing to call one. The disease can generally, under the conditions named above, be successfully treated, but the measures should be radical. In the later stages, too, mechanical appliances are sometimes necessary to prevent or modify threatened deformity, and these can be safely used only by an intelligent physician. When the peculiar profuse perspiration about the upper parts is seen, with the heat and dryness of other parts, and when the tenderness and sensitiveness appear, silicea should be given. Phosphate of lime is an excellent general remedy for rickets. It may be given in alternation with silicea when that remedy is indicated. If the child is fed at the mother's breast, it will have a good effect for her also to take this phosphate. Even when there is a fear that rickets will appear, phosphate of lime is good for both mother and child. The disease is fortunately not common, but parents should never neglect any symptoms that indicate its possible approach.

CANCER.

The indefinite, and often incomprehensible, remarks which are usually made upon cancer in books of this character show that the disorder is one whose treatment does not come within the limits of domestic practice. More than this, the impossibility of imparting the data from which the non-professional reader can detect a cancer is demonstrated by the fact that physicians of large experience can distinguish this from other tumors, in the early stages especially, only by close microscopical tests. If we should attempt a description here, an almost unavoidable result would be to aggravate the terror which one experiences when he suspects that he has a cancer. We, therefore, leave the subject with two cautions: First, the majority of tumors are not cancers, and too much fear is felt on this point. Second, when one has a tumor or any growth which he does not understand, he should at once consult a physician of wide experience, not trusting to inferior talent; for if cancer exists, it should be treated before it has made any progress. It is hardly necessary to warn the reader that the advertising "cancer doctors" are not as safe as the family physician.

One form of cancer is sometimes developed on the tongue, lips or face of a confirmed smoker of tobacco. It is not as malignant as some other kinds, but needs prompt treatment.

TRICHINOSIS, OR TRICHINIASIS.

Parasites of some nature are found in several kinds of flesh-food, and the hog is especially infested with the dreaded trichinæ. If a piece of infested pork that is raw or only partially cooked is taken into the stomach, the parasite is soon liberated and fastens itself upon the mucous membranes of the stomach and intestines. Unless it passes out through the bowels, it penetrates the coats of the intestines and passes into the muscles of the body, either directly through the tissues or through the blood-vessels. Resting in the muscles, it causes constitutional derangements, and death in sufficient numbers.

The symptoms are well marked, distressing, and unpleasant to enumerate. Nor can we see what benefit is to arise from naming them when the disorder is confessedly incurable (though not fatal in all cases), and when a certain result of their mention would be an undue terror in those who should experience any of the symptoms after eating pork. It need be merely said that the only treatment known at present is in *prevention*, which can certainly be effected by wholly avoiding the use of meat that has not been *thoroughly cooked*. It has been said that it may be avoided by simply discarding pork, but this is not absolutely certain, for other ani-

mals may be infested. The hog is, however, the chief source of trouble, and many more of them are thus diseased than is generally supposed. Nor can one with any safety assume that pork of his own raising is free from the parasites. It is never safe to eat a piece of pork until it has been *cooked through*; it makes no difference whether it is fresh, salted, smoked or "pickled."

POLYPUS.

Polypi of two kinds may grow in the nose, ear, throat, rectum or womb. One type is gelatinous, pear-shaped, yellowish, and consists of several soft hanging tumors, supplied with a few blood-vessels. This kind will become larger in moist weather. The fibrous type is less common but more malignant. When the nose is affected, the patient is liable to mistake the disorder for a cold, has difficulty in breathing and swallowing, betrays a nasal sound in the voice, exhibits an enlargement of the nose on the affected side, and can determine upon the character of the trouble by having one look up the nostril and see the polypus. Polypus in other parts, excepting perhaps the throat, will be found only by an experienced observer. Whatever the form or locality, the treatment consists in a removal by a surgeon, which will often be a simple operation, especially if the polypus be gelatinous. The surgeon will give directions on the local applications to be subsequently used.

ABSCCESS.

This consists in a collection of matter in any tissue or organ, and may be confined in a sac, or cyst, or in a portion of tissue which has become broken down. Abscesses are divided into two classes, acute and chronic.

Druitt gives the following description of the acute type, his technical terms being omitted: "It commences with throbbing pain, bright redness, and swelling of the part; these symptoms are soon followed by suppuration, which is marked by an alteration in the color of the skin and a change in the character of the pain; the former becomes livid and the latter less acute, being rather felt as a sensation of weight and tension. After this, the parts between the abscess and the surface become successively softened and disintegrated. The tumor becomes more and more prominent; the center exhibits a dusky-red or bluish color, the skin ulcerates and bursts, and the pus escapes. But, where the pus is formed under dense bands of muscles, or deep in the breast or pelvis, and cannot quickly make its way to the surface, the pain is not relieved but much aggravated by the increase of distension; and the constitutional chills and fever are much more intense."

Chronic abscess first appears as an indistinct tumor, with greater or less fluctuation; it comes on slowly, and is usually unaccompanied with pain,

unless accidentally irritated. It is sometimes due to diseased bone, and this cause may be suspected if it is of long duration, with the pain worse at night, and especially if it has followed an injury. As a rule, however, abscesses are the result of a debilitated state of the constitution, and frequently follow low, exhaustive fevers. They are also the result of blows or injuries, or, as in the breast, of obstruction to the healthy action of the glands.

TREATMENT.—Aconite is needed during the stage of inflammation, or at any time when there is much fever. It may also be applied externally by means of lint saturated with a lotion of it. Give *hepar* during the suppuration to promote this process and hasten the termination to the surface. *Silicea* is indicated by a long-continued, unhealthy discharge, especially when the bone has become implicated, or the disease has started in it. *Mercurius* is useful for painful, throbbing abscess, with discharge of thick matter. This is especially adapted to abscess of the glandular system, when there are chilliness and thirst, and all the symptoms, including the pain, are worse at night. *Arsenicum* is to be given for great depression of the vital forces, and when the discharge is tinged with blood, or has a gangrenous appearance.

When the disorder is the result of local injury, as thorns and splinters, these sources of irritation should, if possible, be removed. Poultices or warm fomentations are very valuable, as they relieve the tension and pain, and, if applied early, before pus has formed, they sometimes prevent supuration by relieving the inflammation. Abscesses, like boils, carbuncles, and other local inflammations, are greatly relieved by pressure, persistent and firm. This can be effected by the use of adhesive straps, whenever the trouble is so located as to admit of their application. These straps should be so applied as to form an even pressure, all tending toward a common center. This forces the blood out of the capillaries, thus checking and lessening the inflammation, and also confines the abscess to a small compass, not allowing it to burrow under the surrounding tissues. In the case of mammary inflammation, if these straps were applied early enough, abscess of this gland would be very rare. It not only forces the blood out of the capillaries, thus relieving the congestion, as mentioned above, but it also prevents the secretion of milk, and so removes one of the great difficulties in this trouble. In inflammation of the *mammæ*, after removing the milk the plaster should be applied in the following manner: Cut a circular piece of plaster large enough to cover the breast; make a hole in the center large enough to allow the nipple to pass through easily, cut four or more slits from the edge nearly to the hole in the center; warm well by means of a hot plate; fasten one of the flaps on the lower side of the breast; draw its corresponding flap firmly up; thus continue until

all the flaps are smoothly fitted over the breast. Two broad straps should be passed smoothly from the under side of the breast up over the shoulder, thus supporting this organ and removing the tension on the gland.

In this connection, mention may be made of the great relief that can be obtained in large heavy breasts by applying these supporting straps; it also lessens the tendency to inflammation. After an abscess has been opened, and its contents have flowed out, straps should be applied firmly, so as to prevent the refilling, and to keep it emptied of its contents.

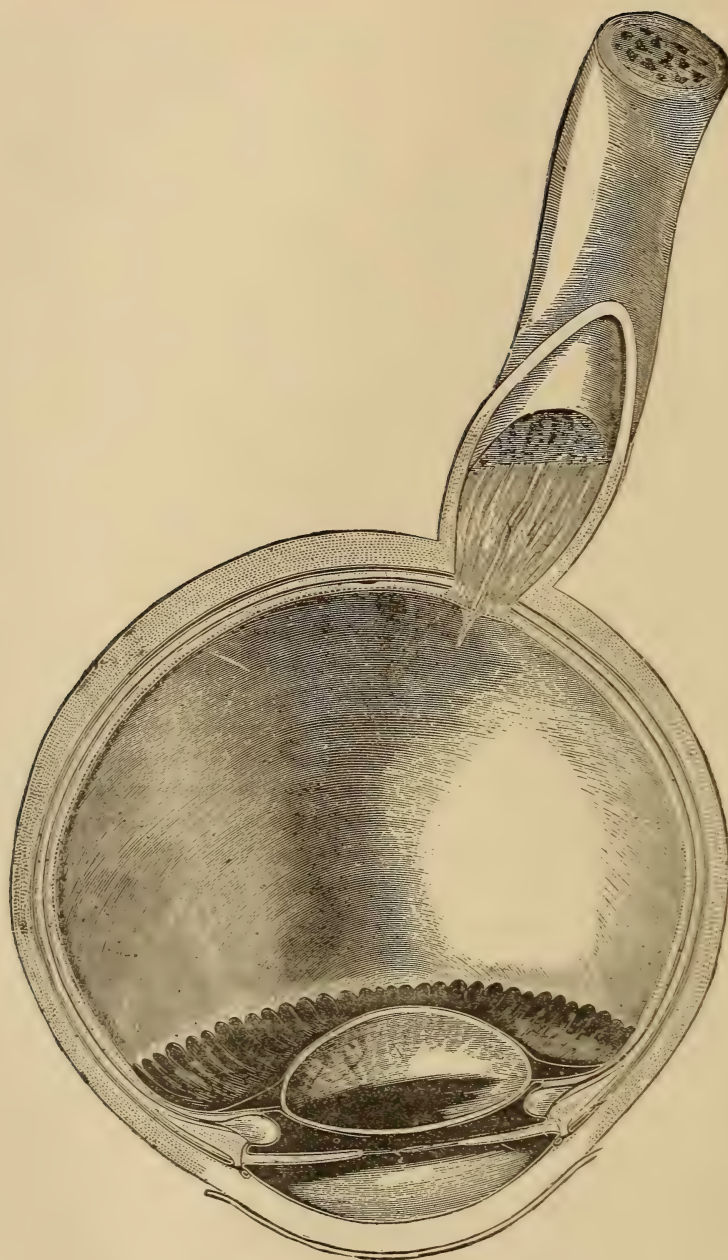
As stated before, abscesses are the result of a debilitated state of the constitution and a lack of pure, healthy blood. This condition demands a supply of good blood-making material, and a liberal allowance of nourishing food is of great importance; this should consist of rich animal broths, beef, mutton, chocolate or cocoa, and sometimes good wine or porter. When the patient has become quite reduced, a change of air brings good results.

HIP-JOINT DISEASE.

This dreadful disorder can be treated only by skillful hands, and resort should be had to such when a patient shows the following symptoms: Drawing up of the leg, wasting of the muscles, and pain about the knee; pain at night, causing the patient to cry out. After a time, the hip is rolled outward; the patient limps and stands with the heel lifted from the ground and the toes turned outward, though he may yet be able to walk or run about; the fold beneath the buttock is higher on the affected than on the unaffected side. In a later stage, the joint of the hip becomes stiff, and the buttock on the same side is somewhat flattened; a slight stroke on the sole of the foot causes pain. Promptly secure aid in the beginning. Keep a watch against the disease in a scrofulous person, or in any one when the hip or limb has received an injury.

WHITE-SWELLING.

A swelling of the knee-joint, causing stiffness, inconvenience, and often pain, sometimes comes on as a manifestation of scrofula, rheumatism, syphilis and other constitutional disorders. Its treatment is to be directed toward the primary disease.



43. SECTION OF THE RIGHT EYE (Highly Magnified).

CHAPTER X.

THE EYE AND EAR.

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SECTION I.

THE EYE.

ANATOMY AND PHYSIOLOGY.

THE exercise of the senses of sight and hearing not only contributes largely to our welfare and happiness, but becomes an actual necessity to mankind in the struggle for existence. The impairment of either one to any considerable degree necessarily limits the sphere of usefulness of the person afflicted. It is therefore a matter of importance that every one understand something of the structure of the eye and ear, and of the care that should be bestowed upon them.

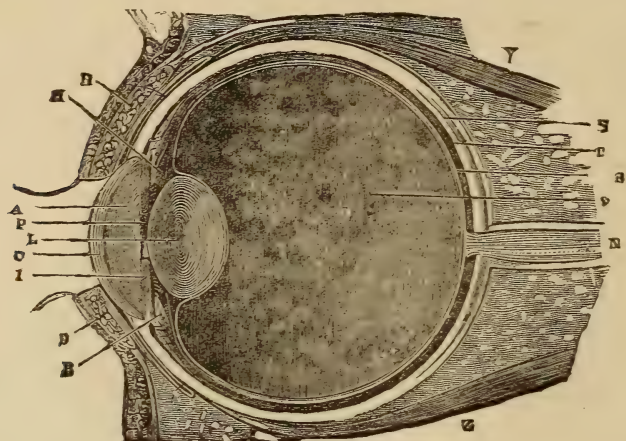
THE EYEBALL.

The eyeball is nearly spherical in shape, and measures about one inch in diameter. It consists of three coats or *membranes*, which surround and inclose certain transparent substances of different densities, generally known as the *humors* of the eye.

Of the membranes, the external one is of a firm, unyielding nature, and is divided into two portions: The posterior four-fifths is called the *sclerotic*, or white of the eye. It serves as a support and protection to the other coats and more delicate contents of the globe, and also as a framework for the attachment of the muscles by which the eye is moved. The remaining anterior fifth of this outer covering is termed the *cornea*. It is a highly polished, perfectly clear and transparent membrane. It can better be seen

by looking at the eye from the side, when it will appear not unlike a minute watch-crystal.

The second or middle membrane of the eye is made up largely of blood-vessels, on which account it is often spoken of as the *vascular membrane*. It is subdivided into three sections: The posterior three-fifths is known as the *choroid*; the anterior portion, the only part visible, is called the *iris*, and lies directly behind the cornea, though not in apposition with it. The center of the iris is perforated by a small circular opening, the *pupil*. The different shades of color in the eye are due to the coloring matter of the iris. At birth all eyes are blue; a few remain so during life, but, in the majority, pigment is deposited in the iris during the first few



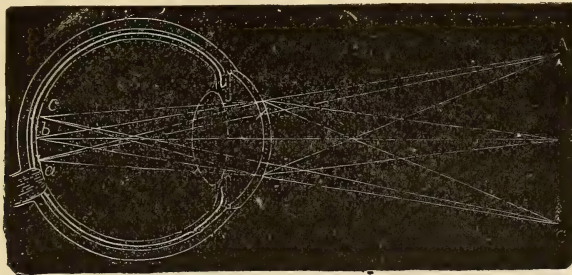
44. ANATOMY OF THE EYE.

S, The Sclerotic. C, The Cornea. Ch, The Choroid. I, The Iris. P, The Pupil. B, The Ciliary Muscle. R, The Retina. N, The Optic Nerve. A, The Aqueous Humor. L, The Crystalline Lens, with its Ligament H. V, The Vitreous Humor. D, D, The Eyelids. X, The Levator Muscle, for lifting the Upper Lid. Y, The Upper Straight Muscle. Z, The Lower Straight Muscle.

months of life, and its quantity and arrangement determine the various colors. The iris is connected with the choroid by a peculiar ring-shaped muscular structure which has a definite and very important function. It is called the *ciliary muscle*, or the muscle of accommodation, and by its action the eye can be adjusted to different distances, for near or distant objects. It corresponds to the screw in an opera glass, by which we can lengthen or shorten the focus of the instrument according to the distance of the object viewed. The entire inner surface of this vascular membrane is covered with a layer of *black pigment*. This black lining of the inside of the eye-ball causes nearly all the rays of light which enter through the pupil to be

absorbed, and does away with the annoying reflections which would otherwise occur. In the class of people known as the albinos, this pigment lining is absent, and it is well known that their sight is impaired and that they are unable to bear a strong light. Here again we can trace the analogy between the eye and the various optical instruments, this pigment-layer of the choroid serving the same purpose in the organ of vision as the lining of black paint in the microscope, the telescope, and other like instruments.

The third and innermost membrane of the eye is called the *retina*. It is by far the most important and essential part of the organ of vision, being an actual continuation of the optic nerve which, after piercing the sclerotic and choroid, spreads out and lines about three-fourths of the globe. The retina, although an exceedingly thin and delicate structure, is composed of ten microscopical layers. It is on this sensitive membrane that the luminous impressions of external objects are formed, and the sensation caused thereby is conveyed to the brain through the medium of the optic nerve.



45. THE RETINA.

Rays of Light from A, B, C, form an Image on the Retina at a, b, c.

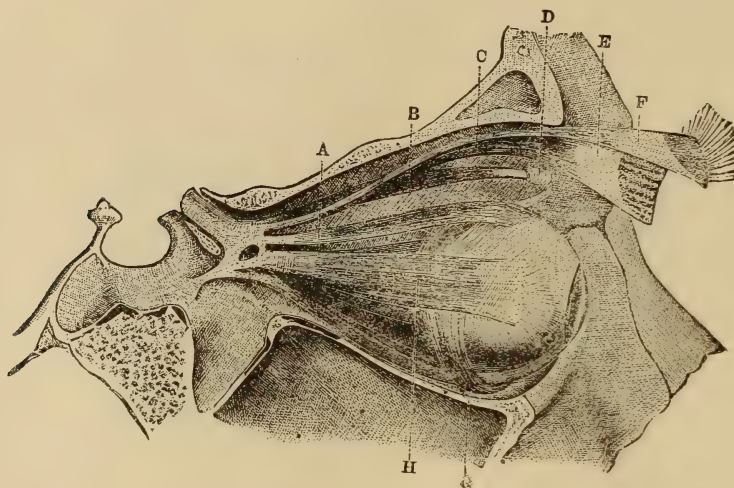
The three membranes of the eye inclose three perfectly clear and transparent substances or humors of different densities. They are named, in the order in which they appear from before backward, the *aqueous humor*, the *crystalline lens*, and the *vitreous humor*. They serve to maintain the spherical form of the eyeball, and also to refract or turn the course of the rays of light, after striking the cornea, in such a way that they converge to a point on the retina. The crystalline lens, which is shaped a good deal like an ordinary convex lens, possesses this refractive power in a higher degree than either of the other humors. Its form can be changed, when acted upon by the ring-shaped ciliary muscle heretofore mentioned, so that its focus is either shortened or elongated at will. The mechanism of this function, which is called the accommodation of the eye, is perfect, and so accurately are the parts adapted, and so precise the adjustment, that in health the action is performed unconsciously, almost involuntarily.

THE ORBIT AND MUSCLES.

The eye is lodged in a bony cavity called the orbit, and is surrounded posteriorly by a cushion, composed chiefly of fat, which secures perfect freedom of motion. It is held in its position in the orbit by six small muscles, which, acting singly or in combination, are able to move the eye in a variety of directions, and with a great degree of rapidity.

THE EYELIDS.

The eyelids serve for a protection of the eye in front, and are composed of a thin plate of cartilage, covered externally with a delicate layer of skin



46. THE ORBIT, WITH THE EYE AND MUSCLES.

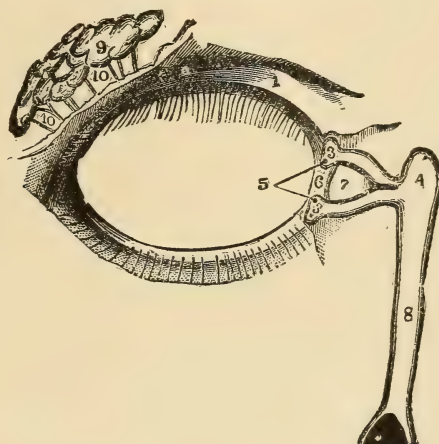
A, Upper Straight Muscle. B, Upper Oblique, passing through a Pulley D. G, Lower Oblique. H, External Straight, (the Internal Straight being concealed by it). C, E, F, Muscles of the Lids.

which is continuous with the general cutaneous surface. Their inner side is lined with a thin layer of mucous membrane, which is also reflected over the anterior portion of the eyeball. This lining membrane contains a number of minute glands which secrete a clear, transparent fluid that serves to moisten and lubricate the two mucous surfaces, so that there is an almost entire absence of friction in the motion of the lids over the eyeball.

THE EYELASHES.

In the margin of the eyelid is located a row of short, stiff and pointed hairs, called the eyelashes. When the eyes are closed, the lashes of the upper lid interlace with those of the lower, and afford a barrier against the

entrance of any foreign substance into the eye. They also act in the capacity of sentinels, or delicate feelers, and in the darkness give warning to the eye of the approach of flying insects, dust, or any small moving bodies. The lash grows and matures about once in six months; it then drops out, and its place is supplied by a new one. In some diseases of the eyelids the growth of the lashes is so interfered with that they point in the wrong direction, turning inward and rubbing over the eye with every motion of the lids. This not only induces pain and discomfort, but sometimes gives rise to inflammatory troubles, and may induce a serious impairment of vision. If there are only two or three of these "wild hairs," as they are termed, they may be removed from time to time with a small pair of forceps made for this purpose; but if they exist in considerable numbers,



47. THE LACHRYMAL ORGANS.

1, 2, Cartilages of the Lids, the Skin being removed. 3, 3, Lachrymal Canals. 4, Lachrymal Sac. 5, Entrance to the Canals. 6, Entrance to the Lachrymal Lake. 7. 8, Nasal Duct. 9, Lachrymal Glands. 10, 10, Ducts of the Glands.

some surgical interference is necessary in order to establish a cure. In a very aggravated form of the disease the hair-follicles are destroyed, so that the lashes entirely cease to grow. The edges of the lids then present a roughened, irregular, nodulated appearance, which, aside from constituting a deformity, is liable to seriously jeopardize the sight.

THE LACHRYMAL GLANDS.

The eye is provided with a special apparatus for supplying it with moisture. It consists of a small almond-shaped gland, located in a depression at the upper and outer portion of the orbit. This gland has several small ducts which open upon the mucous membrane, and through which

flows a clear, transparent, saline liquid, known as the tears. The secretion of the tears is largely influenced by the emotions; also by any irritant which directly affects the eye, as cold, wind, dust, smoke, and the like. The tears, after passing over the surface of the eyeball, are conveyed to the inner angle of the lids and pass through two minute capillary orifices, one in the upper and one in the lower lid, which open into the nasal duct. Through these channels the moisture of the eye is drained into the nose. These little canals sometimes become obstructed or narrowed by a cold, inflammation, or some foreign substance. In this case, the passage of the tears is interfered with, and they flow over the margin of the eyelid out upon the cheek. This condition is generally known as a "weeping eye;" it is always worse in cold or windy weather. Some surgical treatment is usually necessary to effect a cure for this difficulty, the object being to restore the normal opening of the obstructed tear-canals.

DISEASES OF THE EYE.

In mentioning some of the diseases of the eye, those peculiar to the eyelids would naturally come first.

STYES.

Styes are small boils that appear on the margin of the eyelids, and, though of a trivial nature, are often very painful while they last. The symptoms which they present are familiar to every one. Commencing with an itching which is referred to the edge of the lid, the sensation rapidly changes to one of pain, which increases as the inflammation progresses. There will be redness and considerable swelling of the parts, the latter often extending to the skin of the cheek, and causing a puffy appearance of that side of the face. The pain is frequently of a throbbing nature, and there is a marked tenderness of the eyelids. These symptoms continue thus for three or four days, when the swelling shows a distinct white point, and, if not opened, will generally break spontaneously, followed by a discharge of pus which brings relief to the acute suffering. Like all other inflammations of this nature, they are liable to recurrences, and in many cases a dozen or more styes may appear on the two lids before the disease is exhausted.

Styes frequently appear after an attack of the measles or scarlet fever. They may indicate an excessive use of the organs under unfavorable circumstances, more particularly when a refractive error is present, subjecting the eye to a much greater strain than is normal. The disorder nearly always shows that the general system is not in a proper condition. The danger lies in the tendency to recurrences, whereby a chronic irritation or

even inflammation of the lids is induced. In case the styte is very large, or the symptoms unusually severe and prolonged, the hair-follicles in the part affected may be destroyed, leaving a bald spot in the row of eyelashes.

TREATMENT.—It is better to open a styte artificially than to leave it to break itself. This can usually be accomplished by the use of a cambric needle. If the pus is not discharged externally, it may, instead of being absorbed, become hard and cheese-like, or even similar to chalk, and so give rise to a permanent thickening and irregularity of the margin of the lid, thereby causing considerable disfiguration. During the painful stage, suppuration can best be hastened by the application of hot water. This will relieve the acute pain, soften the tissues, and promote the formation of pus. The use of poultices is rather to be discouraged, as their action may extend somewhat deeper than the eyelids and exert a harmful influence on the eyeball. Aconite, pulsatilla and hepar sulphuris, as internal remedies, act well during the progress of a styte, by tending to subdue the inflammation and hasten the suppurative process. Mercurius, sulphur or silicea should be given between the attacks. Regularity in the habits of eating and sleeping should be insisted upon.

INFLAMED MARGIN OF THE EYELIDS.

This disorder is often the result of exposure to smoke or dust, may come from repeated attacks of styes, and is frequently met with in those having a scrofulous taint in the system. The edges of the lids are red and present an irregular, thickened, or nodulated appearance. The lashes are few in number, and, instead of being uniform in their size and in the direction in which they point, are short and stunted, giving the margin of the lid a ragged and uneven look, and are generally matted together with a tenacious, gluey discharge, the removal of which is attended with considerable difficulty, and, unless great care is exercised, with the loss of the lashes themselves. When this disease has been neglected, or has existed for some time, the hair-follicles are destroyed, and the lashes cease to grow. This constitutes a marked deformity, the lids always remaining red and unsightly, more particularly in windy and cold weather.

TREATMENT.—An essential point in the treatment of this form of inflammation is cleanliness. The lids must be kept free from the accumulation of the discharge. This is best removed by laying on the closed lids cloths wet in warm water, thus soaking and softening the crusts until they can be removed without pulling and injuring the lashes. This procedure is a tedious one, often requiring an hour or more to thoroughly clean the lids, but it must be persisted in once a day, and even twice if necessary.

After the discharge has been entirely removed, the edges of the lid may be bathed with weak camphor-water or a solution of borax. At night just before retiring, a small quantity of cosmoline should be rubbed on. The latter, aside from having a curative action, will prevent the lids from being gummed or stuck together in the morning. Graphites, mercurius, petrolin, sepia and sulphur are the internal remedies for this condition.

CATARRHAL OPHTHALMIA.

This is commonly termed a cold in the eye, and is a very prevalent affection at certain seasons, and in some localities. It may be caused by exposure during cold and wet weather, the mechanical irritation of dust and smoke, or may be the result of contagion. The symptoms are a slight redness and swelling of the skin of the eyelids, and sometimes a very marked redness of the front part, or white, of the eyeball. If the eyelids are turned out so as to expose to view their under surface, it will be observed that the mucous lining, instead of presenting a smooth, uniform appearance, looks red and inflamed, and is studded with several minute elevations or prominences. There is a discharge of mucus from this inflamed membrane which, as it floats over the cornea, somewhat obscures the vision; or, collecting at the inner corner of the eye, must be removed with a soft handkerchief. During the night, this cleansing being neglected, the discharge accumulates on the edges, and the latter are generally gummed together in the morning. The patient will complain of a sensation like that of a foreign substance in the eye, and though in some cases this may amount to actual pain, it is not often that there is very acute suffering. This sensation is caused by the little swellings on the mucous surface of the lids, as these rub over the cornea during the act of winking, and thereby excite some irritation of that membrane. Photophobia, or dread of light, is generally present in a varying degree, according to the severity of the case; there is an increase in the secretion and flow of tears, and the latter may be hot and scalding, causing some soreness of the cheek as they overflow the lids and run down the face.

The danger to be apprehended from a neglected case of catarrhal ophthalmia is that it may run into something worse, notably another disease of the mucous membrane called "granular ophthalmia," more often termed granular lids. This affection of the eyelids nearly always extends to and implicates the cornea, and not infrequently results in blindness.

The discharge from an eye affected with catarrhal ophthalmia contains highly contagious properties, and great care should be taken that a person suffering from this trouble does not communicate it to any one else. The

basins and towels that he uses for toilet purposes should be touched by no one else. If the discharge from an eye so affected comes in contact with another and healthy eye, it may give rise to a severe and more infectious disease than the original.

TREATMENT.—The treatment of this disease is by slightly astringent lotions, by which the discharge is arrested and the mucous membrane is restored to a normal condition. These lotions are to be made from alum or sulphate of zinc, two grains of either to an ounce of water. In light cases, where the discharge is slight and there is very little redness, a lotion made of five grains of borax to an ounce of water may be sufficient to effect a cure. Two or three drops of these preparations are to be dropped into the eye about three times a day. Immediately after their use, cloths wrung out in cold water should be laid on the closed lids for ten or fifteen minutes. Aconite, arsenicum, mercurius, pulsatilla and sulphur are useful internally.

PURULENT OPHTHALMIA.

This is a disease of the mucous surfaces of the lids and eyeball, and often commences in a manner similar to catarrhal ophthalmia, which it resembles at the start. The symptoms, however, soon become more marked and intense, showing the serious and dangerous nature of the trouble. The eyelids are red and swollen, their distension at times being something enormous, so that it may be impossible to open them. The eyeball, if visible, is very red and inflamed, and the cornea, instead of being bright and lustrous, often presents a steamy appearance. There is a constant discharge of thick yellow pus, which gathers on the edges of the lids, or flows down the cheek, requiring continual attention to keep the parts clean.

This is one of the most formidable diseases to which the eye is ever subjected, and many of the inmates of our blind asylums are numbered among its victims. It often spreads as an epidemic in an army, in schools or charitable institutions, where the buildings are crowded and the sanitary surroundings are in an unfit condition. It is frequently seen in infants, often appearing within a day or two after birth, and many a child has been rendered hopelessly blind in a few days or even hours because the proper care and treatment have been withheld. The danger lies in the tendency of the inflammation to spread to the cornea, giving rise to ulceration and perforation of that membrane, and even destruction of the eyeball.

The same precautions that were recommended to prevent the spreading of catarrhal ophthalmia are to be insisted upon, and even more strenuously in this disease, for the dangers of contagion are increased by the virulence of the purulent discharge.

TREATMENT.—The treatment of purulent ophthalmia is to be intrusted to no one but a physician. It is one of the diseases in which delays are extremely dangerous; the matter of a few hours may make the difference of sight or blindness for a lifetime.

INFLAMMATION OF THE IRIS.

Iritis, or inflammation of the iris, is one of the most painful diseases of the eye. It often owes its origin to the presence of rheumatism in the system, or some constitutional taint whereby the quality of the blood is vitiated. An almost constant symptom is pain, though it is not confined exclusively to the eye, but extends to the brow and corresponding side of the head. It is usually worse at night and during damp or rainy weather. It is characterized by redness of the eyeball; dread of light; a profuse flow of tears, worse when exposed to a bright light; no discharge of mucus or purulent matter, as in the inflammations previously described. There is generally a marked loss of sight during an attack, and one attack predisposes to another, so that a loss of sight may be the result.

TREATMENT.—The treatment of iritis must always be under the direction of a physician.

CATARACT.

This is a disease of the crystalline lens, which causes an opacity of that part of the eye, thus preventing the rays of light from passing through the pupil to the retina, and so inducing blindness. When a cataract is present, the pupil is generally white, and often very conspicuously so. This disorder is more frequently seen at an advanced stage of life, though it is met with at all ages, and is sometimes a congenital or hereditary affection. Wounds of the eye in which the lens has been punctured always produce a cataract. Diabetes has been known to give rise to an opacity of the crystalline lens.

TREATMENT.—The only treatment in this disease is a surgical one, the object of which is the removal of the opaque obstruction, so that light can reach the back part of the eye. After an operation has been successfully performed, a strong convex lens must be constantly worn to supply the place of the crystalline lens which has been removed.

DISEASES OF THE INTERNAL EYE.

The structures situated behind the crystalline lens, as the vitreous humor, the choroid coat, the retina and optic nerve, are subject to their own peculiar diseases, though they are not visible by ordinary means, as are the

diseases of the anterior portion of the eye. At one time every case of blindness in which the loss of sight could be assigned to no visible disease—and this was always the case when the trouble was located behind the crystalline lens—was termed amaurosis. But the year 1851 marked the discovery of an instrument by which the interior of the eye could be illuminated and the optic nerve and other structures in the posterior half of the organ be made visible. As a consequence, the term amaurosis is now restricted to blindness resulting from atrophy, or, as it is sometimes called, a paralysis of the optic nerve. The instrument by which the inside of the eye can be seen is named the ophthalmoscope, and only through its use can disease of the retina, choroid and optic nerve be recognized.

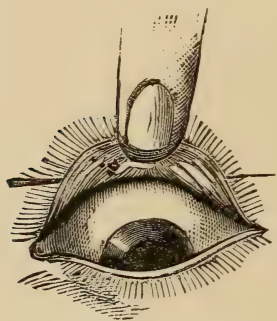
INJURIES AND FOREIGN BODIES.

The accidents which may happen to the eye are very numerous and of a similar nature to those occurring in other parts of the body. Burns and scalds affect chiefly the lids and anterior portion of the eyeball, though they may do an irreparable injury and induce blindness by causing inflammation and subsequent opacity of the cornea. This form of injury is very apt to produce adhesions between the eyelids and the ball, on account of the destruction of the mucous membrane, thus allowing two raw surfaces to come in contact. These adhesions, beside causing considerable disfiguration, seriously interfere with the free motion of the lids over the ball, thereby tending to perpetuate the irritation or inflammation set up by the original injury.

Wounds of the eye, either from a blow or a sharp and pointed body, may rupture or penetrate the sclerotic coat, thus allowing a portion of the delicate contents of the globe to protrude through the opening. It should be remembered that a penetrating wound of the eyeball is always of a serious nature, and liable to lead to blindness and destruction of the organ of vision. Although this is not always the inevitable result, the most skillful treatment and careful attention on the part of the surgeon are necessary to prevent such a deplorable termination.

The most frequent injury to the eye is caused by the striking against it of some small foreign substance, as a particle of dust, coal-cinder, or bit of metal. These may strike the eye with considerable force and become imbedded in the inner surface of the lid, the mucous covering of the ball, or the cornea. Less harm can ensue when the foreign body is in the first-named locality, and its removal is also much easier. In order, however, to successfully accomplish this, it is necessary to invert or turn the upper lid. This little manœuvre is quickly done and is entirely painless when skillfully

performed. The patient is directed to look downward while the operator seizes the central lashes of the upper lid and gently pulls it down and somewhat away from the ball, making a slight pressure with the other hand by means of a probe, pencil-tip, or even with the finger, along the upper margin of the lid. It is necessary that the patient look down during the whole procedure. When the lid is once inverted, the foreign body can frequently be discovered as a minute speck lying on the red mucous surface, and can generally be easily wiped away with a soft handkerchief. Such a substance, if sticking to the cornea, and not imbedded in the substance of that membrane, can frequently be removed in the same way. If, however, two or three attempts with the handkerchief fail to bring away the offending body, it is probably imbedded and firmly fixed in the wounded tissue. It then becomes necessary to resort to some instrumental measures, and the services of the physician become indispensable, for certainly none but a careful and trained hand should attempt to use any instrument about the eyes. In the case of children, owing to their crying and violent struggles, the administration of an anæsthetic often becomes necessary.



48. The Lid Inverted for the removal of Foreign Matter.

A quite frequent occurrence in the harvest-field, and one often productive of the most disastrous consequences, is the striking and lodging in the eye of minute particles from the beard of the grain. It is liable to be followed by a most destructive inflammation of the cornea in a very few days, and sometimes even hours, if the removal of the substance is neglected. Again, in some instances the eye seems to tolerate the presence of a foreign body for an indefinite time without much resentment. The writer recently removed the seed of a sunflower from beneath the eyelid of a lady who was positive that three weeks had elapsed since the time of the accident. The seed bore evidences of having been in contact with a liquid for some time, being considerably swollen and softened. She had experienced no pain and scarcely any inconvenience, being only reminded of it at times by a feeling of something moving under the upper lid.

Even after the removal of a foreign body from the eye, the same painful sensations may remain for some time, owing to the tissue being wounded or abraded. If the symptoms of irritation are persistent, the eye should be frequently bathed in cold water, a handkerchief be carefully tied around it, and all usage of the organ be stopped until such symptoms have ceased.

In case of a burn or scald of the eyes from hot liquids, a few drops of

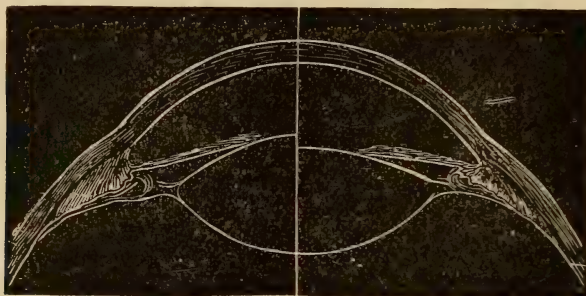
pure olive oil should be dropped into the eye; this can be repeated every few minutes, and between times the closed lids be covered with bits of cloth wet in cold water. If the eye is injured by a strong acid or alkali, a chemical action on the tissue takes place, and the destruction is both rapid and extensive. If the eye is seen immediately after the injury, an effort should be made to neutralize the action of the destructive agent. If an acid has caused the damage, a solution of bicarbonate of soda (ordinary baking-soda) a half-teaspoonful to a glass of water, should be gently syringed into the eye; or it can be bathed freely with milk. On the other hand, if the injury is from an alkali, as potash, quicklime, etc., the lids and eye should be bathed with a weak acid, about a teaspoonful of vinegar to a glass of water. Afterward a few drops of olive oil can be applied, and the lids be covered with a cold wet cloth. The popular practice of rubbing the outside of the lid so as to push a foreign body out at the inner corner will certainly cause irritation if the body is gritty or sharp, and is to be avoided in the removal of an alkali or acid.

Particles of iron, percussion caps or shot may penetrate the tissues and become lodged inside the eyeball. Any attempt at their removal then is fraught with danger, and generally results in a failure. The inflammation from such an injury may or may not be very severe, and the blindness be either partial or complete; but any eye in which a foreign body is known to be lodged is not to be treated lightly, for the danger is not only to the wounded organ, but also to its fellow, through sympathetic inflammation. The unhappy termination of this terrible sympathetic affection is but too well known to the medical man, and his efforts to stay or limit its fearful progress are often futile after it has once commenced. The only safety lies in prevention, and in order to insure that, the removal of the wounded eye becomes necessary. If the organ is blind, it matters little to the patient, the only consideration being one of personal appearance; but if there is still some remaining sight, it becomes a grave and serious question for the surgeon to determine just what course to pursue, for even though the risk is great from letting the eye alone, the patient would naturally shrink, and the doctor hesitate about advising the removal of an eye which still retained some sight. There is sometimes a stage of sympathetic irritation that precedes an attack of actual inflammation, the symptoms of which are a slight redness around the cornea; watering when the eye is exposed to a bright light; some difficulty in adjusting the organ for near vision, as reading or writing. If the patient is sufficiently near the doctor to apply for relief as soon as these symptoms of irritation are manifested, it may be safe to let the wounded eye alone; but under any other conditions, safety can only be guaranteed by removing the injured organ.

ACCOMMODATION AND REFRACTION.

By "accommodation" is meant the power which the eye has of adjusting itself to different distances; at one moment gazing at a remote point or viewing some natural scene; the next, engaged in reading, writing, or carefully examining some very minute object. It is evident at once to the thinking reader that some change has taken place in the eye; the crystalline lens is the part in which this change has been made. By reason of its soft and compressible structure, this lens can be made to alter the convexity of its surfaces, thus rendering its focal distance greater or less. The change is brought about by the action of the ciliary muscle mentioned on a previous page. The act of accommodation, though performed almost unconsciously, is thus accomplished by a distinct muscular effort.

By "refraction" is understood the ability of the eye to bring to a focus



49. ACCOMMODATION.

The Right Half of the Cut shows the Eye at Rest; the Left Half, the Lens adjusted for Near Vision.

on the retina parallel rays of light, or those coming from distant objects. It is a passive function, that is, one not accompanied by any muscular exertion, but is dependent on the shape of the eyeball and its inclosed transparent media. When an eye can, by its refractive power, and without any accommodative effort, focus parallel or distant rays upon the retina, it is said to be emmetropic, that is, the distance between the cornea and the retina and the focal distance of the organ measure the same. There are some deviations from this condition of emmetropia, which will now be considered.

NEAR-SIGHT.—MYOPIA.

A near-sighted eye is one whose measurement from before backward is too long. It is adjusted only for divergent rays of light, or those that come from near objects; consequently only those near objects can be seen clearly. Parallel rays of light coming from distant objects cannot be focused on the

retina, but are brought to a point in front of it. The rays cross at this point and, continuing, form what are called "circles of diffusion" when they strike the retina. A concave glass gives these distant or parallel rays a sufficient degree of divergence to bring them to a point on the retina, instead of in front of it, and distant vision is made clear. The technical name for this disorder is myopia. In a large number of those so affected there is an inherited predisposition to the defect. It is seldom that a high degree of myopia is found in a child without there being a previous history of the difficulty in one of the parents or some near relatives. Still, it may be induced, without the inherited tendency, by an excessive use of the eyes. In young children, when the tissues are soft and yielding, when the organs are growing and developing, the prolonged and undue use of the eyes for near work, as looking at fine objects, may bring about this stretching or bulging of the eyeball in a backward direction. This is the result of a too long-continued effort of the accommodative act, together with a great strain of certain internal muscles by which the act of convergence is effected. The lateral pressure upon the globe by this tension of muscles tends to make the ball yield in the backward direction.

A still further aggravation is induced by a poor light, as is often the case in schools, and by an indistinct print, in consequence of which the book is carried still nearer the eyes, and the tension from the greater convergence increases accordingly.

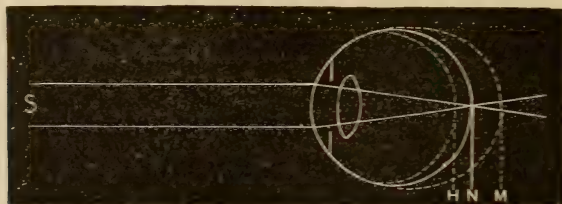
Myopia is essentially a disease of civilization, it being found far more frequently among the educated than the illiterate, more in the cities than the country, and in the professions more than among those who labor with their hands. Where there is an inherited tendency, it almost invariably increases during the years of school-life, even when the greatest care is exercised. Statistics show a decided increase of short-sight from year to year at this period, so that, while in elementary schools only about six per cent. of the attendants are myopic, in the high schools and universities the proportion ranges from twenty-five to thirty per cent.

One or two fallacies concerning near-sighted eyes, which have existed for a long time in the public mind, should be here mentioned. Many myopic individuals have been heard to remark that their eyes are only near-sighted, but are perfectly well and strong. This belief rests on the fact that they can see smaller objects, and in a weaker light, than others. The explanation of this is that they are able to approximate the object closer to the eye. All authors agree in saying that a near-sighted eye is an unsound eye; that in it there exists more than a simple error of refraction. Optically considered, it may amount to nothing more, but anatomically it means an extension or elongation of the eyeball, and this indicates disease.

The other error is that the sight in a myopic eye improves with age. As we advance in years the pupil of the eye becomes smaller, and as this limits the circles of diffusion on the retina which come from the parallel rays of light reflected from distant objects, these objects are rendered rather more distinct. A near-sighted person can illustrate this effect very easily by looking through a pin-hole which has been made in a blackened card, or by partially closing the eyelids so that the pupil is made smaller. This latter procedure becomes a fixed habit with some near-sighted people, as they soon learn that distant vision is thereby made much clearer.

The eyes of all near-sighted children should be carefully watched and looked upon as unsound organs, capable indeed, by careful usage, of maintaining their condition of usefulness, but liable to many dangers from which normal eyes are comparatively exempt.

TREATMENT.—The refraction of a near-sighted eye becomes normal by



50. SHAPES OF THE EYEBALL.

S, Rays of Light. N, Normal Eye. M, Short-Sighted Eye. H, Long-Sighted Eye.

placing a concave glass before it, which gives distant or parallel rays of light a sufficient degree of divergence to be focused on the retina. For example, suppose a case in which the "far-point" of the eye is ten inches, that is, that this is the farthest point at which small objects look distinct; then a concave glass with a focal length of ten inches will give distant or parallel rays of light the same degree of divergence as if they had come from an object only ten inches from the eye. In the selection of glasses for near-sighted eyes, great care should be observed. The eyes should be carefully examined and their refraction be accurately determined. There is great danger that the existing difficulty will be increased by wearing glasses that are too strong. The common practice of trying on a number of pairs of glasses at an optician's, or, what is very much worse, of purchasing them from some itinerant spectacle vender, is to be deprecated, as in many cases it will be disastrous. To insure precision of adjustment in this really important, though apparently simple matter, one should act upon the advice of skilled counsel, and thus avoid the untoward experiences of many patients.

LONG-SIGHT.—HYPERMETROPIA.

Whereas short-sight consists in an abnormal length of the diameter of the eyeball from the front backward, by which the focus is formed in front of the retina, long-sight, or hypermetropia, is an opposite condition, in which the focus is formed behind the retina. In the latter, the parallel rays of light form "circles of diffusion" on the retina while passing through to unite behind it. In this, only convergent rays of light can be united on the retina, and as these rays do not exist in nature unless the light has passed through a convex lens, a lens of this shape must be used to make clear vision.

At first thought it would appear that an eye affected with hypermetropia would have no clear sight at any distance, but it is here that accommodation plays an important part with the refraction. The crystalline lens, by virtue of the property it possesses of changing its shape, acts the same as a convex glass held in front of the eye, rendering the parallel rays convergent and bringing forward the focus of the eye so that it falls upon the retina. Distant vision in *emmetropia* is a passive sensation, and when, as in hypermetropia, it can only be accomplished by an act of accommodation, the eye is laboring under a constant strain; this strain increases, and is proportionately greater the closer the object is brought to the eye, for the accommodation necessary for near vision must be added to the requisite amount for distance.

When the degree of hypermetropia is slight, the person young and vigorous, or engaged in an occupation that does not require close vision, the defect may go unrecognized for some considerable length of time. But if the eyes are obliged to be used continuously for reading or writing, or in a poor or artificial light, they soon show symptoms of fatigue, which for a long time previous to the discovery of the true nature of the difficulty were hard to explain. The eyes have a normal appearance, and they may be used for a short time without inconvenience, but if near work is at all prolonged, an uneasy sensation in the eye is experienced, which soon amounts to actual pain, these painful sensations being sometimes referred to the brow rather than to the eye. The print grows dim and misty, and it may become actually impossible to see it. If the work is laid aside for a short time, the annoying symptoms quickly disappear, but only to return when the work is again resumed. The trouble is always worse at night, and if work is persisted in, it at last becomes impossible to read for more than a moment or two without pain in the eyes and a blurring of the sight. Sometimes a child has accidentally discovered by putting on his grandmother's glasses that his evening lesson can be prepared with far more ease and

freedom from pain, but detection of his act is quickly followed by a removal of the dangerous things, and a solemn warning is administered against ever repeating the offense.

Before the discovery of the nature of hypermetropia and the remedy which gives immediate and permanent relief, many a person whose tastes were of a literary tendency, and whose habits were studious, was condemned to a life of idleness, or compelled to engage in some distasteful occupation. A favorite prescription of probably the most eminent English ophthalmic surgeon of his day was a trip to Australia, engaging in sheep-raising, or some such pastoral work, with a complete abandonment of any business that would require reading or writing, lest incurable blindness be induced. Prof. Donders, of world-wide reputation for his researches in physiological optics, discovered that long-sight, or hypermetropia, consisted essentially in a shortening of the axis of the eyeball, and that the focus fell behind the retina, but that a proper convex glass brought the focus forward upon the retina, thus correcting the error in the eye, and making it emmetropic.

ASTIGMATISM.

This is a disorder which results from a lack of uniformity in the curvature of the cornea. The perfectly formed cornea has nearly the same degree of convexity in all of its meridians, and these meridians consequently have the same focal distance. If now the symmetry of the cornea be disturbed, some of its meridians will be abnormal, the eye being perhaps myopic or hypermetropic in its horizontal meridian and normal in its vertical, or *vice versa*. Such a condition is known as astigmatism. The bowl of a teaspoon will roughly illustrate the shape of an astigmatic cornea, the convexity of the meridians running parallel with the handle being much less than that of the ones at right angles to it.

When astigmatism is present, there is always some impairment of the vision. Vertical and horizontal lines can not be seen with an equal degree of clearness, a fact of which advantage is taken in determining whether this peculiarity of refraction exists or not. If two sets of parallel black strokes, some in a horizontal and some in a vertical direction, are drawn on a piece of paper and viewed by an astigmatic person, the one set will appear clear and well defined, while the other will be blurred and indistinct. In most cases of this kind perfect correction can be obtained by cylindrical glasses.

OLD-SIGHT.—PRESBYOPIA.

As the years roll on and age advances, we find that we do not possess the same clear and distinct vision which we were accustomed to in early or

middle life. This is particularly noticeable for near work; the paper or book is held further from the eyes; a difficulty is experienced by the seamstress in threading the needle; a brighter artificial light is necessary, and even this does not fulfill all the requirements, for in a short time the sight becomes dim, the eyes are wearied and tired, and a strained, unnatural feeling comes over them, if the work is persisted in, which is relieved only by rest. This condition of the sight is called presbyopia, or old-sight, and is the result of physiological changes that take place in the eye in consequence of the advance of age. Prominent among these changes is a hardening of the substance of the crystalline lens, whereby it loses a certain amount of its elasticity, the ciliary muscles being unable to overcome the deficiency and giving to the lens the degree of convexity necessary to enable it to focus clearly on the retina divergent rays of light, or those coming from near objects. Distant vision, being a passive sensation and not attended with any accommodative effort, remains unaffected. The point at which an emmetropic eye becomes presbyopic has been arbitrarily fixed at eight inches; that is, when the eye is unable to bring ordinary print up to eight inches, it is presbyopic. This occurs with nearly every person between the ages of forty and forty-five years. A convex glass then becomes necessary, by the aid of which vision is again made clear and the unpleasant sensations of fatigue and over-work are caused to disappear. In choosing a glass, the weakest one which enables the eye to read ordinary type at a distance of eight or ten inches should be selected. This should cause the eye to be used with ease and comfort.

HYGIENE OF THE EYE.

There is no doubt that the health and integrity of the human organism are preserved in their highest degree by a regular and systematic exercise of all the parts, and the eyes form no exception to this rule. Excesses of any description are always to be avoided, but a certain amount of exercise of the eyes is conducive to the maintenance of their state of usefulness, and to the preservation of the normal acuteness of vision. It is difficult to fix any definite rule for regulating the use of the eyes, for even in perfect health there is such a wide difference in the strength and power of endurance in various persons that what would be an easy and harmless task for one individual to perform might prove very hazardous for another to attempt. An organ is supposed to be in perfect health when it performs its work so that the individual is unconscious of its action; but when, through any feeling of pain or weariness, of blurring or indistinctness of the sight, we are made to realize that we have eyes, something is wrong.

Probably the most frequent use to which the eyes are put for near work is reading. For the purpose of testing the vision, letters have been arranged in sizes which increase in a definite ratio, and each set of these test-letters is seen at an angle of five minutes.*

That is, No. 1 is seen up to twelve inches at an angle of five minutes; No. 2, at twenty-four inches, and so on. It is seldom that these letters can be read beyond the distance indicated. Of course there should be no continuous reading of letters of the size just referred to, though normal vision should have the ability to read this fine print. The proper distance from the eye to the book is about eighteen inches, and then the print should look clear and distinct. If the book is brought any closer, it necessitates a greater tension of the accommodation, with a higher degree of convergence of the eyes, and fatigue will ensue the quicker.

There are high degrees of far-sight, and some cases of astigmatism, in which the book must be brought very near the eyes in order to see at all. In these instances, the retinal image does not increase in clearness, but gains in size the nearer the book is brought to the eyes, and consequently the sight is better.

Astigmatic eyes are often slow in distinguishing letters, and in reading seem to feel considerable uncertainty. This is due to the fact that they are unable to see vertical and horizontal strokes at the same time, and two acts of accommodation must be made in order to recognize the letters.

It should be remembered that distant vision is a passive sensation, per-

*Specimens of Test-types used in determining the acuteness of vision.

NO. 1.

"I have found it of great assistance to explain the rationale of the treatment to the patient. The exercise of the muscles is best accomplished by reading. I tell them that in reading pure muscular action is required, as much as in lifting a weight. The patient is directed to select a book of good type, but not too absorbing, and to read regularly with the prescribed glasses three times a day. He must determine by trial the number of minutes he can read without discomfort."

NO. 2.

"He may find this to be thirty seconds, five minutes, ten minutes, or even more. He must, however, find this initial point. Starting at this point he must read regularly, and always with the glasses. The first reading must not be until one half hour after breakfast, the second at noon, the third finished before sundown. The periods of reading must be regularly increased from day to day. No other use of the eyes should be allowed."

NO. 3.

"In cases where discomfort occurs in less than five minutes, the increase should not be more than one half minute per day, until ten minutes are reached. In other cases the patient may increase one minute each day, until he can read thirty minutes three times a day without pain. If this can only be done with pain, the patient must be encouraged to persist, notwithstanding the pain. Reading is the best exercise, but it frequently is the case that the patient is very anxious to write or sew."

formed without any muscular effort, while reading is only accomplished by a decided muscular action. Hence, in any long-continued period of reading, it is well to occasionally lift the eyes from the book and gaze into the distance for an instant, that the muscular tension may be relieved, and the eyes be rested. In some schools it is a rule that during the hours of study the child shall under no pretext raise his eyes from the book; and a very pernicious rule it is, being one of the most fruitful causes of short-sight, especially when any hereditary tendency exists.

Aside from bringing the book close to the eyes, one of the most injurious positions to assume while reading is lying down. It is very difficult to hold the book in the proper position when reclining, and unless the book is held directly in front of the eyes, which would soon become very tiresome, too great a strain is put upon the muscles which draw the eyes downward. Besides, when the head is on a level with the body, a greater amount of blood is drawn to the brain, and this tends to produce congestion in the delicate membranes of the eye.

Reading should never be persisted in when the eyes are tired, or when the light is poor and insufficient. A particularly trying time is toward the close of the day when daylight is disappearing. It is far better for the eyes to work by the same degree of illumination in the morning, for then the light is increasing rather than diminishing, and the eyes would be rested and in a fresher condition.

The eyes should be used very sparingly when the body is overcome with fatigue, when there has been great loss of sleep, or during recovery from severe illness. By inattention to this last caution some eyes have been permanently injured, so that they could never be used again with comfort. It is not unfrequently the case after a severe attack of diphtheria that there is a total inability to read or see small objects, owing to a paralysis of the ciliary muscle; the muscle of accommodation, when it is not completely paralyzed, is often so weakened that any tax on it causes pain.

Reading while riding in a carriage or traveling on the cars is a source of fatigue to the eyes, necessitating a greater demand on the muscle of accommodation. The motion and jar of the vehicle cause an unsteadiness in the position of the book, so that the eye is continually adjusting itself to the varying distance at which the print is held. The difference between reading under these circumstances and under the most favorable conditions is the same as that between holding a given weight continuously for a certain number of minutes and lifting up and setting down the same every minute during the time.

A few words may here be added on the subject of illumination, the source and quality of light, and the direction from which it comes. Day-

light is the most natural, and therefore the best illumination for the eye to work with. Injury may be inflicted if the light is either too strong or too weak, though the dangers from an excess are less than those from a deficiency, for a surplus amount of light can always be regulated by shades.

A good artificial light is better than poor and defective daylight. The clearness with which an object is seen depends not alone upon its size, but also upon the amount of light reflected from its surface, and the reduction of the illumination is equivalent to reducing the size. To counterbalance this, it becomes necessary to bring the object closer to the eye, and a greater tax is laid on the accommodative and converging powers. A great deal of work, particularly in the line of study, is performed by artificial light, and in the substitute that must take the place of daylight, the most important requirements are that it possess a sufficient illuminating power, and be able to maintain this in a uniform degree. A light that flickers or burns unsteadily is always bad. This is one striking fault of gas-light when used with an ordinary burner. The Argand burner gives a good light, and is free from unsteadiness; any excessive glow is softened by a white porcelain shade and the amount of illumination is quickly and easily regulated. The fact that the flame from this burner gives out a large amount of heat is one disadvantage. This drawback is not so marked in an oil-lamp known as the "student's lamp," which is furnished with an Argand burner, chimney and shade, and, though its illuminating power is not equal to gas, it is preferred by many.

In all artificial light, the yellow color largely predominates, and in this respect it is very different from white sunlight. This preponderance of the yellow rays can be obviated by a shade or chimney tinted with blue.

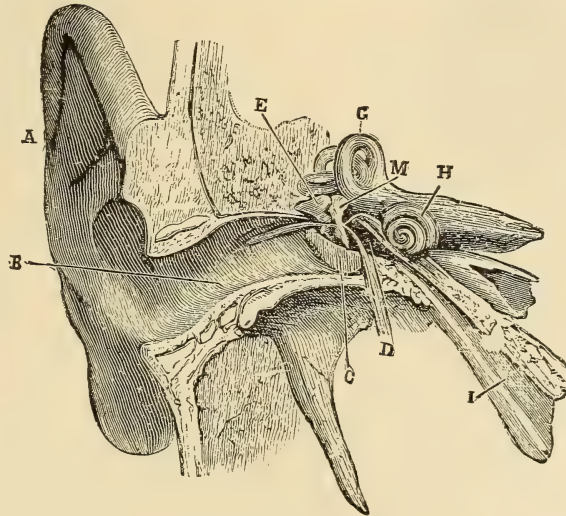
The direction from which the light comes is a matter of some importance. It should not come from directly in front, for light that strikes the eye thus causes an undue contraction of the pupil, and so reduces the quantity of light reflected from the object, which is equivalent to reducing its size. Nor should the light come from directly behind, for the body then throws a shadow which covers the object. Neither should it come from the right hand, for in writing the hand throws a shadow over the paper, and a shadow moving over a lighted surface is a source of great annoyance to the eye. The best direction is from the left side, and the source of the light should be slightly higher than the level of the head. Windows are often constructed so as to extend nearly or quite to the floor, in which case a portion of the light comes from below the level of the head. The lower part of the window should then be covered with a shade. It is customary to adorn the upper part of windows with curtains and shades, though from an optical point of view, and for the comfort of the eye, it would be better for the order to be reversed, and the lower part of the window be shaded.

SECTION II.

THE EAR.

ANATOMY.

ANATOMISTS make three divisions of the ear, the external, middle and internal. The external comprises the auricle and auditory canal. The middle consists of the ear-drum, or tympanum, the Eustachian tube, and the mastoid cells which are located back of the drum. A membrane, commonly called the drum-head, separates the auditory



51. SECTION OF AN EAR.

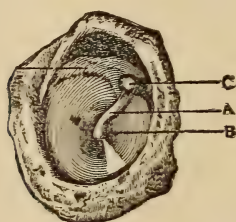
A, Auricle. B, Auditory Canal. C, Half of the Drum-Head. E, Incus, or Anvil. M, Malleus, or Hammer. H, Cochlea, or Snail-Shell. G, Semi-circular Canals. I, Eustachian Tube. D, Small Muscle.

canal from the cavity of the drum. The internal ear is otherwise known as the labyrinth; from the complicated structure of its numerous membranes, chambers and passages. Its main part is a large central cavity, called the vestibule. Into the front of this cavity opens a spiral-shaped passage which

is not unlike a minute snail-shell, and hence is named the *cochlea*. At the back of the same chamber enter three minute tubes, each in the form of a half-circle, and therefore known as the semi-circular canals. A more detailed study of these divisions will now be made.

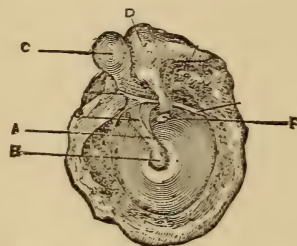
THE EXTERNAL EAR.

The Auricle.—The general shape of the auricle is that of a funnel, its surface presenting several well marked ridges and depressions. It is composed of layers of cartilage, except the lower portion, or lobule, the part which is often pierced preparatory to wearing jewelry, this being made up of fat. The auricle gradually merges into the auditory canal, much as the flaring mouth of a trumpet converges and becomes continuous with its tube. The skin which covers this part of the ear continues within and forms the lining membrane of the canal, passing down to the inner extremity of this



52. OUTER SURFACE OF THE DRUM-HEAD.

A, B, Hammer-Handle. C, Short Projection of the Hammer.



53. INNER SURFACE OF THE DRUM-HEAD.

A, B, Hammer-Handle. C, Head of the Hammer. D, Body of the Anvil. F, Long Process of the Anvil, which joins the Stirrup.

passage, closing it, and becoming the outer layer of the drum-head described below.

The Auditory Canal.—As remarked before, this canal is a continuation of the auricle. It is a little over an inch in length, and about a quarter of an inch in diameter, being slightly narrower near its center than at either end. The skin of this passage is supplied with glands which secrete perspiration, and from which the hairs grow. It has also another set of glands, peculiar to this locality, which secrete the ear-wax, a substance which keeps the skin of the canal in a soft and moist condition, and, from its sticky nature, tends to prevent the entrance of small insects into the ear. At its inner extremity, the auditory canal is closed by the drum-head, and is thus separated from the tympanum, or drum-cavity.

The Drum-Head.—The drum-head, or *membrana tympani*, is a thin, translucent membrane, slightly oval in shape, about a quarter of an inch in

diameter, and less than one two-hundredth of an inch in thickness. Though so delicate, it can be separated into three distinct layers. The outer layer, as noted above, is a continuation of the skin lining the auditory canal; the inner one is a like continuation of the mucous lining of the drum; the middle layer is composed of fibrous tissues and forms a framework for the other two.

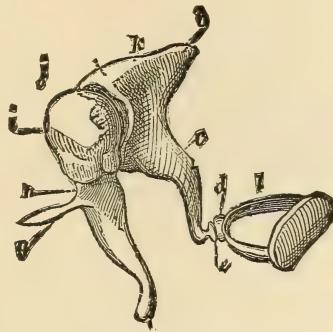
THE MIDDLE EAR.

The Ear-Drum.—This drum or cavity, called also the tympanum, is a little six-sided chamber measuring about a half inch from top to bottom, the same from front to back, and about one-sixth of an inch from within outward. Its roof consists of a thin plate of bone which separates this cavity from the one which incloses the brain; directly beneath its floor passes the jugular vein, one of the large blood-vessels coming from the brain; on the front wall of the cavity can be seen the opening into the



54. BONES OF THE EAR.

1, 2, 3, Hammer viewed from different positions.
4, 5, Anvil so viewed. 7, 9, Stirrup.
8, Foot-Plate of the Stirrup.



55. ARTICULATED BONES OF THE EAR.
(four diameters.)

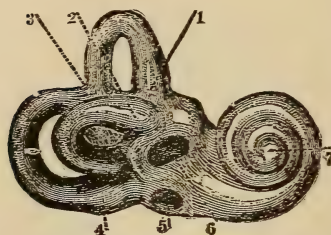
f, g, h, i, j, Hammer. a, k, b, c, e, Anvil.
d, l, Stirrup.

Eustachian tube described below; a large part of the back wall is taken up by the opening into the mastoid cells; the outer wall is made up mostly of the drum-head; the inner one is bone and forms the division between the drum-cavity and the internal ear, or labyrinth. In the bony partition just mentioned are two apertures, one oval, the other circular, both leading into the labyrinth, the circular one being closed by a delicate membrane which is called the second drum-head; the office of the oval one is mentioned immediately below.

Within the ear-drum, and stretching from its outer wall, or drum-head, to its inner wall of bone, is a little chain composed of three minute bones, known as the *malleus*, or hammer, the *incus*, or anvil, and the *stapes*, or stirrup, the names being derived from a resemblance respectively to the

objects named. The outer end of this chain is the handle of the hammer, which is firmly joined to the drum-head by an attachment effected between its middle and outer layers. The head of the hammer rests against the body of the anvil, and forms with it a movable joint. The incus is less like an anvil than a bicuspid tooth, one root longer than the other, as may be seen from the accompanying illustrations. The long point of the anvil in turn forms a joint with the small angle of the stirrup, the base or foot-plate of the latter fitting accurately into the oval aperture or window which opens through the bony partition into the labyrinth. The stirrup is the smallest bone in the body. These little bones are held in position by ligamentous attachments, which are fastened to the walls of the drum or tympanum, and motion is imparted to them by three small muscles.

The Eustachian Tube.—In the front wall of the ear-drum is the opening into the Eustachian tube, a narrow canal about an inch and a half long, which connects the drum with the upper and back part of the throat.



56. THE LABYRINTH (highly magnified).

1, 2, 3, 4, Semi-Circular Canals. 5, 6, Vestibule. 7, Snail-Shell.

The upper portion of this tube is composed of bone; the lower part, of cartilage. At the junction of the bony and cartilaginous portions the tube is perceptibly constricted, and this part is therefore called the isthmus; but each end is considerably larger, its lower opening, called the pharyngeal orifice, being quite broad and trumpet-shaped.

The Mastoid Cells.—In the rear wall of the ear-drum is an opening which leads into what are known as the mastoid cells. The hard and rounded prominence which one may find behind the auricle, or outer ear, has a peculiar internal structure of irregularly shaped cells, much like those of a sponge in appearance, which communicate with one another as well as with the ear-drum.

The whole of the middle ear is lined with a mucous membrane, which passes into all parts of the numerous divisions of the mastoid cells, covers the walls of the tympanum, forms the innermost layer of the drum-head, invests the three little bones, with their muscles and ligaments, passes into and lines the Eustachian tube, and at its pharyngeal orifice becomes continuous with the mucous lining of the respiratory and digestive tracts.

THE INTERNAL EAR, OR LABYRINTH.

The internal ear is the most important division of the auditory apparatus, since it contains the auditory nerve. Its divisions are now to be studied.

The Vestibule.—This is a little pear-shaped cavity about one-fifth of an inch in diameter, which communicates in its outer part with the eardrum, through the oval window into which the base of the stirrup-bone fits; and in its inner part is connected with the semi-circular canals and the cochlea.

The Semi-Circular Canals.—Behind the vestibule are situated three semi-circular canals, both ends of each opening into the vestibule, except that two utilize one opening at one end, thus reducing the number of orifices in the back wall of the vestibule to five.

The Cochlea.—In the front wall of the vestibule is an opening which leads into the cochlea, or snail-shell, the most complex part of the labyrinth. It consists of a bony tube wound spirally two and a half times around a central column of bone. This tube is divided throughout its whole length by a thin plate of bone which projects into it until it meets a section or curtain of the membranous labyrinth mentioned below, the two making a complete partition between the sides or halves of the spiral tube. The round window in the bony wall which separates the internal ear from the drum-cavity opens into the cochlea.

The bony labyrinth, including the vestibule, semi-circular canals and the cochlea, is filled with a water-like fluid in which floats what is known as the membranous labyrinth. The latter is a smaller membranous duplicate or fac-simile of the bony labyrinth, with parts exactly corresponding to all the intricate and winding compartments of the latter, and held in place by delicate attachments on the bony walls. This membranous labyrinth is also filled with a water-like fluid in which float the still more delicate and terminal fibers of the auditory nerves. In the cochlea is a remarkable arrangement of these nerve-fibers, the appearance which they present being not unlike that of the key-board of a piano; this has been named the "organ of Corti," in honor of the discoverer. There are somewhat more than three thousand of these fibers in the human ear, and it is supposed that they are so attuned as to correspond to and vibrate in unison with the various musical sounds.

PHYSIOLOGY.

Sound is the impression made on the auditory nerve by motion from rapidly vibrating substances. The atmosphere is the medium by which these vibrations are usually conveyed to the auditory nerve. A familiar illustration of this is seen in the violin, the string of which, on being struck, is at once made to vibrate rapidly. The vibrations of the string are communicated to the air which surrounds it, and which is thrown into similar vibrations that extend outward from their point of origin in the form of a

circle. These vibrations consist of expansions and condensations of air, and, if they could be rendered visible, would resemble the little waves or ripples seen on the surface of a pond of water which has been agitated by a pebble thrown into it. The perception by the ear of these waves of the air, called sound-waves, is hearing. A musical sound or tone is produced when the length of each sound-wave is the same, or when they occur at regular intervals; but if they arise at irregular intervals, simply a noise is the result. The greater the number of vibrations of a sonorous body the higher the musical tone which is produced. In the ordinary piano the vibrations range from 33 to 3,960 per second, between the lowest and the highest tones. Some musical instruments give forth notes having 4,500 or more vibrations a second, but these high and shrill sounds are generally very unpleasant and painful to the ear, from giving rise to such rapid and violent vibrations of air in the auditory canal.

The Auricle.—The auricle is useful as a reflector, condenser and conductor of the waves of sound. That it is not essential to hearing has been demonstrated in many instances wherein that appendage has been lost. An old-time and now obsolete punishment for cowardice consisted in depriving the culprit of his ears by cutting them off. After this mutilation the hearing power was but little affected, the chief disadvantage being the personal defect. Still, in the matter of hearing, some importance is to be attached to the auricle; every one is familiar with the fact that a person with impaired hearing, when listening intently, will place the hand behind the ear, thereby increasing its surface and facilitating its function as a reflector of sound.

Auditory Canal.—The sound-waves which come in contact with the auricle are reflected to the opening of the auditory canal, pass down that tube, and strike the drum-head.

Aside from its function of reflecting and conducting the sound-waves, the external ear affords protection to the deeper and more important parts of the hearing apparatus. As the eyelids serve to prevent many injurious substances from entering the eye, so the auditory canal guards against the incursion of insects or small particles which might find their way into the ear; not because of any power it has to close, but from its peculiarly tortuous form, and from the sticky nature of its secretion, the ear-wax, which is smeared about its entrance.

The Drum, or Tympanum.—The drum is a cavity which, in its normal condition, is filled with air. The drum of the musician is familiar to every one, consisting of a hollow wooden or metallic cylinder, over which is tightly stretched an animal membrane; but in order that the membrane may vibrate freely, the air must have free access to both surfaces, and this is

afforded to the inner surface by a hole in the side of the instrument. The ear-drum contains the same essential features, the hollow box, the animal membrane, and the opening for supplying the cavity with air. The Eustachian tube, through which the drum is ventilated, does not remain constantly open, but during the act of swallowing the walls of the tube are drawn apart, so that air can pass from the throat to the drum. Thus the supply of air in this cavity is kept constant and even. In certain diseases of the middle ear, the lining of the Eustachian tube becomes swollen and the passage so obstructed that no opening remains; the air in the tympanum is absorbed, and, as no fresh supply can reach it from the throat, a partial vacuum is formed. The pressure from within being diminished, the air in the auditory canal pushes the drum-head inward, thereby diminishing the size of the drum-cavity. This sinking in of the drum-head causes pain and ringing in the ear, with a certain degree of deafness.

The Eustachian tube opens when any sudden and loud sound strikes the membrane, thereby preserving the latter from injury and possible rupture. There would be disadvantages in having the Eustachian tube constantly open, prominent among which would be the confusion attending the passage of the sound of one's own voice directly from the throat through the open tube, the sound-waves thereby coming in contact with those that were communicated to the membrane through the auditory canal. Again, air would pass in and out of the drum during each act of respiration, thus subjecting the drum-head to a constant flapping oscillation, which would interfere with its proper vibration in response to the motion of the sound-waves.

It is not unfrequently the case that through accident or disease the drum-head becomes ruptured, and it was formerly supposed that if this membrane were once perforated the hearing was irrevocably lost. We know now that not only may the drum-head be perforated, but quite a large section of it be destroyed by ulceration, and still a very fair hearing be maintained. In fact, in some diseases of the drum it becomes actually necessary to puncture the membrane in order to liberate the mucus or pus which has formed in the cavity behind it as the result of inflammatory processes. As the inflammation subsides and recovery of the disease advances, these openings generally close, and often by the finest tests that can be made it cannot be discovered that the hearing is impaired. There is no tissue in the human body that heals more readily, or possesses the property in a higher degree of reproducing itself.

The Internal Ear, or Labyrinth.—The physiology of this section of the ear, notwithstanding an immense amount of research and study, still remains imperfectly understood. Located deeply in the solid portion of the

temporal bone, with a structure so delicate and complicated, and at the same time so inaccessible, many of the questions concerning its functions are of necessity still debatable. It has been customary for physiologists to regard the vestibule as the part of the labyrinth in which noise or ordinary sounds are perceived; the cochlea as the seat of the perception and recognition of musical tones; while in the semi-circular canals is determined the direction from which sounds proceed. Late physiological experiments on the semi-circular canals of birds and animals show that the nerves situated in these delicate tubes are in some way connected with the co-ordination of muscular movement and the maintenance of the body in a state of equilibrium.

Summary.—In a brief review of hearing, let us trace a wave of sound from its point of origin; starting, for example, with a violin-string that has been set in motion. These vibrations communicate their motion to the adjoining air, which is immediately thrown into a series of waves or undulations that extend in every direction. These waves, which convey the sound at about the rate of 2,000 feet a second, strike the auricle, are collected and reflected by it to the opening of the auditory canal, pass down through this tube, and strike the drum-head, which at once responds to the shock by a to-and-fro movement; the little hammer-bone attached to this membrane participates in the motion and transmits the impulse to the next bone, the anvil, which in turn sets the stirrup in motion; the foot-plate of this last-mentioned bone, set in the oval window, slides in and out, like the movement of a piston in a cylinder; this motion of the stirrup agitates the fluid that is contained in the bony labyrinth; the little membranous sacs which float in this fluid set up a motion, and communicate it to the many thousand little fibrils that spring from their inner surface, the ultimate distribution of the auditory nerve. Each of these delicate threads is so attuned as to vibrate in unison with its corresponding external sound. This sound may arise from the simple tone of a single string, or it may be produced by the most varied and composite tones of a symphony, requiring for its production a hundred instruments; each individual sound being selected by its own corresponding little fiber, while the whole is transmitted to the intellect by a single impulse as one grand harmony.

DISEASES OF THE EAR.

In a work of this kind it is impossible to give a minutely detailed description of the diseases of the ear, or of their treatment, not only because the scope of the book forbids one to proceed to such a length, but chiefly because a long and careful course of training is necessary to enable even the

physician to know what remedial agents to apply to this delicate organism, and how best to use them.

Disease of this organ in most cases means deafness, or at least an impairment of hearing. The number of people who have lost a portion of the hearing in one or both ears is surprisingly large, some writers estimating it as high as thirty per cent. Deafness often creeps on the victim so gradually that for a long time he experiences no difficulty, and only when some delicate test is made, as listening to the tick of a distant watch or the low and faint tones of the human voice, does he awaken to the fact that his hearing is not perfect. Every person has what might be termed a superfluous amount of hearing, that is, hearing that he might lose without any serious inconvenience, hearing that he would not miss in the ordinary affairs of his life. People who are accustomed to spend a considerable portion of every day in a noisy place, as in certain manufacturing establishments or on board a train of cars, would not miss this fine degree of hearing. Again, laborers who are in the noise of active out door work all day, and at night shut up in closely confined and noisy quarters, have no demand made on them for any very acute hearing, and do not think that a certain degree of impairment means any loss of the function.

It is intended to notice some of the more common disorders of the ear which, if neglected, may terminate in immediate deafness, with a view to calling attention to the necessity of having an early and intelligent recognition of the difficulties, so that the proper means may be instituted for their removal. It is well known that in the beginning or earlier stages of any disease medicinal treatment is more responsive and prompt results are obtained, but in no class of maladies does this truism apply more forcibly than in affections of the ear. On this point no more appropriate words can be found than the following, taken from the introductory chapter of a work by Dr. Anton Von Troeltsch: "No one will deny that every high degree of impairment of hearing is a very serious affection to the person concerned, in all his relations; because it limits very much his intercourse with others, and when it increases to a great extent, it may entirely destroy his capacity for business and social intercourse. Thus it is not only the enjoyment of life which is greatly impaired by deafness, but many persons are affected in their vocation, in the exercise of their calling, and in their capability of securing a livelihood, by a loss of hearing. Not less important is the influence which impairment of hearing exerts upon the intellectual development of a child. In childhood, the foundation for the development of our intellectual being rests largely upon the acuteness of our senses, especially of the eye and ear. The senses are the mediators between the brain of the child and the outside world by means of which he gradually appreciates all de-

tails. The impressions conveyed to the child's brain excite thought, imagination and expression. The more certainly and accurately the senses of a child convey impressions from without the more clear will be the perceptions in the brain, and the more sharply defined will be the understanding and applications of these impressions for the formation of ideas and expressions. On the other hand, if the child sees imperfectly, if he hears only a part of what is addressed to him, from these imperfect, indefinite, and often inapplicable impressions of the senses are produced only confused ideas, wanting both in clear definition and perfect form. Who would venture to deny that the greater part of education, both at home and at school, is transmitted to the child through the ear, not only so long as he is unable to read, but even later than this? Every teacher will allow that deaf children are particularly prone to become fickle or visionary; that it is especially difficult for them to give continuous attention during instruction or conversation; that, as a rule, it is hard to get them to concentrate their thoughts. On the other hand, we cannot wonder that in such children, unless nature and education have been particularly adapted to correct the disadvantages of early deafness, are produced imperfect and impractical characters, often decidedly illogical in thought, superabundant in speech, vacillating and uncertain in business; in short, their whole being has a character peculiar to itself."

There seems to be a senseless and studied obstinacy on the part of many individuals afflicted with ear-troubles, oftentimes of a most disgusting nature, about adopting any rational means that may be recommended by the physician for their benefit or improvement; but this same class will grasp with the greatest eagerness at some ridiculous suggestion that may be gathered from any unreliable source, and the greater the imposition on their credulity the more willing they are to accept it. For instance, oils extracted from the skunk and rattlesnake are said to have cured deafness. Human as well as animal urine has been instilled into the ear for the relief of pain; while another advises for the same trouble the dropping of woman's milk into the ear, but adds the very important caution that, if it be a boy who is affected, the milk must be from a woman who is nursing an infant of the other sex. For the removal of a foreign body from the ear it has been recommended to cut the head from a small lizard, place it in the ear, and leave it there for twenty-four hours, when it will be found to have the offending substance in its mouth. Comments on such folly ought to be unnecessary, and yet so prone are many even in this enlightened age to trust to charms that they will resort to such expedients until their ills have been so long neglected that medical treatment may be in vain.

FROST-BITE.

In very cold weather it is no uncommon thing to meet with frozen ears, a disorder which needs no description.

TREATMENT.—The treatment in such cases is the rubbing of the affected part with snow, or with cold water, the temperature of which may be gradually increased as feeling and sensation are restored. Care should be exercised in thus manipulating the organ, as rough handling may produce some injury to the auricle. As the skin of the auricle is often lost in a frost-bite, it is well to rub cosmoline over the parts for several days.

ECZEMA.

This disease, commonly termed salt-rheum, is very frequently met with in the auricle. It occurs more often in children than adults, and in females oftener than in males. The symptoms are a swelling and redness of the ear, with a formation of vesicles which break and discharge a clear and sticky fluid; this dries on the surface and forms thick and unsightly crusts. The disease may be brought on by a lack of attention to cleanliness, or by wearing on the head dressings that are too warm and fit over the ears too snugly. Disfiguration of the auricle is very apt to result, the ridges and depressions of the surface being sometimes obliterated; more often, however, the ear remains swollen, enlarged, and unsightly.

TREATMENT.—In this affection too frequent washings are to be avoided, but the crusts are to be carefully removed by soaking them with warm water, or, better, by the application of a poultice made of ground flaxseed, care being taken that none of the latter gets into the canal. This process is slow and tedious, but if the crusts are torn off carelessly and too quickly a raw, bleeding surface is left, and deformity is more likely to result. After the ear has been thoroughly cleansed and dried, a powder composed of equal parts of oxide of zinc and starch, which have been carefully pulverized and mixed, is to be dusted over the surface; this should remain without being disturbed as long as possible. Another application which is often very efficacious is cod-liver oil and glycerine, equal parts of which are to be rubbed over the diseased parts after they have been cleansed as described above. Attention should be given to the diet, and in many cases medication must be directed to the general system in order to prevent recurrences.

Eczema of the auricle frequently extends into the auditory canal, where it is much more troublesome to treat. While confined to the auricle, it does not affect the hearing, but its presence in the canal may seriously impair it if the disease progresses and extends inward, giving rise to ulceration and even perforation of the drum-head.

CHAFING.—INTERTRIGO.

This is an irritation of the skin that is frequently found between the posterior surface of the auricle and the side of the head, and sometimes amounts to an actual soreness and rawness of the surfaces. It is oftener noticed in very fat children or those who perspire a great deal. It may come from too much washing, or from keeping the head too warm.

TREATMENT.—The trouble is easily remedied by keeping the parts as dry as possible and dusting on a little powdered starch, to which it may be necessary to add a little oxide of zinc.

BOIL OR ABSCESS IN THE EAR.

This is sometimes called "circumscribed inflammation of the auditory canal," as distinguished from the diffuse type which is treated in the next section. An inflammation of this kind in any locality is always a painful affection, and when the auditory canal is the seat of the difficulty, serious apprehensions are often entertained for the safety of the hearing. The disorder usually commences with an itching or burning sensation, which may be referred to the mouth of the canal, or may be situated deeper than can be reached by the finger. These sensations are quickly succeeded by pain, the severity of which increases more and more as the disease progresses, until at last it becomes almost unbearable. There is considerable swelling in the skin of the canal, with great tenderness to the touch; it is impossible to lie on the affected side, and even the touching of the auricle causes pain; the suffering is also increased during eating, as the motion of the lower jaw during the action of chewing causes pressure on the inflamed part. As the swelling in the canal continues, the passage becomes smaller and contracted, and, in severe cases, the walls actually come in contact, producing thereby a complete closure; this, of course, causes impairment of the hearing proportionate to the amount and continuance of the swelling. The patient is often unable to sleep; there is a loss of appetite, with foul tongue, and more or less fever. These symptoms last from three to five days, when the swelling often breaks and there is a discharge of pus which brings a relief from the acute symptoms; the pain ceases, the ear can again be touched and handled, and, as the swelling disappears, the hearing returns. The flow of pus lasts about three days, and then the ear gradually returns to its normal condition. This is the course if the disease is limited to the formation of one boil or abscess; but there are generally several recurrences before the process stops, and a crop of these little swellings often appears in the ear. To have the disease limited to one is a fortunate exception. Often the discharge no sooner begins to decline after one attack than a

fresh sensation of the burning and itching announces the beginning of another boil, and a renewal of the whole difficulty.

This disorder is generally an evidence of a wrong state of the system of some kind. Irregularity in eating and sleeping, or a protracted season of pleasure and gaiety, with the late hours which it necessitates and the injudicious food usually indulged in, is apt to be followed by a series of boils.

TREATMENT.—The aim of the treatment during the painful stage is to cut short the attack by hastening the formation of pus. To prevent recurrences, special attention to the general system is required; above all other things, regularity in eating, sleeping, and the taking of outdoor exercise is to be insisted on. When the first symptoms of the inflammation are felt, a small pledget of cotton wet in a solution composed of equal parts of spirits of camphor and glycerine and introduced into the canal may stop the attack; too much dependence, however, must not be placed on this measure. For the relief of pain, and at the same time to promote the formation of pus, heat is the best means that can be used. Hot water is always available and at the same time is the best medium that can be used for this purpose, the fountain syringe or nasal douche being the best instrument for its application, because producing a continuous stream. Even filling the ear with hot water from a teaspoon will answer in the absence of a more suitable appliance. During the intervals between the warm irrigations, a piece of cotton wet with glycerine, to which a few drops of laudanum have been added, can be kept in the ear. Small bags filled with bran or salt and laid against the side of the head, are convenient for applying dry heat. Poul-tices had better be abstained from, for they are no more efficient and may do harm.

Probably the quickest means of ending a boil in the ear is to make a free incision into the swelling, even before any pus has formed. The bleeding which follows, and which is to be encouraged by applying warm water immediately afterward, brings relief and hastens recovery. Of course, for such a procedure the services of a physician are necessary. The administration of aconite or pulsatilla in drop doses, or calcium sulphide in one-tenth grain doses, is recommended during an acute attack. Between the attacks the ear should be protected from cold air, when out of doors, by wearing cotton or an ear-muff; but when the recurrences have ceased, these should be abandoned.

DIFFUSE INFLAMMATION OF THE CANAL.

There is another form of inflammation of the auditory canal which differs from the one just described in that the whole lining of the canal is

implicated, though the severity of the sensations is less marked. The predominating symptom is a persistent and obstinate itching, together with which there is often some pain, with a sensation of fullness and impairment of the hearing. The skin lining the ear is dry, red and thickened, and there is a notable absence of the ear-wax. The disease is often caused by digging or picking the ear with an ear-pick or hair-pin, or by dropping into it oils or some substance which is resorted to for the relief of toothache.

TREATMENT.—This can hardly be undertaken by one other than the physician. In case of pain the ear can be syringed with warm water, and for the relief of the itching a small quantity of cosmoline can be smeared over the irritated and diseased surface; but for anything further competent medical advice should be sought.

HARDENED OR ACCUMULATED WAX.

The ear-wax in a state of health is soft, of an oily nature, and yellow in its color. It is secreted in small quantities, and the natural tendency of the ear is to expel it without any external assistance. But it is sometimes secreted in such large quantities that nature cannot remove it in the ordinary manner. It is then abnormal in quality as well as quantity; instead of the yellow color, it appears dark-brown, sometimes quite black; and from a soft, yielding substance, it may become as hard as a stone. The changes come about gradually, and so long as the auditory canal is not entirely blocked or obstructed, one may be unaware that any trouble exists; but some morning he may find himself quite deaf. The condition is all the more unaccountable because the night before the hearing was apparently perfect. But the plug of wax which has slowly been gathering and hardening has slipped or been pushed down on the drum-head, and, stopping the canal as well, has produced this sudden deafness. Together with the impairment of hearing, there will frequently be associated pain, noises in the ear, and dizziness. The peculiarity of the trouble is the sudden nature of the attack. It may come on after bathing and getting water in the ears, and is often brought about by cleaning the ears out with the twisted end of a towel. The patient nearly always refers the trouble to a cold, and as this is a disease of the ear that is usually quickly relieved, he realizes, after receiving help, that the hearing has not for a long time been what it should have been.

TREATMENT.—Although the symptoms of this affection are well marked, it can be positively decided upon only by an inspection of the ear with the proper instruments, which must be done by the physician. After the diagnosis is once made, the removal of the obstruction is accomplished by the use of warm water and the syringe, or any other appliances adapted

to the case, according to the judgment of the surgeon. It is not unfrequently the case that an entire removal at one time is impossible, and some solvent must be dropped into the ear to soften the mass; suffice it to say, that deafness from this cause alone should be entirely relieved, and that the proper means, when used in a skillful manner, are unattended with pain.

FOREIGN BODIES.

Cases of foreign bodies in the ear are met with in children much oftener than in adults. The list of articles that may find their way into the auditory canal of a child is quite a long one. Grains of corn, coffee-berries, peas, seeds of every description, pebbles, bits of coal, chalk, glass, wood and paper, buttons, beads, pins and tacks, have all been removed from the ears of children. A foreign body in the ear may or may not cause a good deal of trouble. Articles like seeds, which swell and enlarge from the absorption of moisture, are apt to cause pain from pressure on the sides of the canal, and deafness from closing the passage, while instances have been known in which a glass bead or button has been retained in the ear for years without inconvenience or even knowledge of its presence. If no pain results from it, the child, either through forgetfulness or fear of punishment, may not speak of it, and it is only discovered by accident when the ear may be examined for some other trouble, perhaps a long time afterward. Insects not unfrequently get into the ears during the warm season, more especially among those who pass considerable time in the woods or amidst shrubbery, or are in the habit of sitting or lying on the grass. A living insect in the ear always causes a good deal of disturbance. The efforts which it makes to extricate itself, often accompanied by a buzzing or fluttering noise, create a most distressing and almost unbearable sound in the affected organ. The feet or claws of most insects are sharp, and if they come in contact with the drum-head, are liable to scratch and wound this membrane, causing the most intense pain.

The attempts made to remove a foreign body from the ear have often caused more damage by far than could ever result from the presence of the offending substance itself. Instances are not wanting in which the effort at removal has resulted in pushing the body deeper into the canal, so as to wound and even pierce the drum-head. If the operation is successful as far as the removal is concerned, it is often attended with serious inflammation of the canal or drum. Cases are recorded in which death has been caused by diseases which were induced from the efforts made in the extraction of a foreign body. Removing a smooth or rounded object from the ear is not an easy matter and often taxes the patience and ingenuity of the most skillful hands.

TREATMENT.—If the body is small and not wedged tightly in the canal, hold the head with the ear downward, or, better still, lie down with the head projecting over the edge of the couch; then have it struck lightly several times; the jar attending this procedure may be sufficient to dislodge the object so that it will drop out. If this accomplishes nothing, the ear can be carefully syringed, though even the use of water is to be applied with caution, since moisture causes a certain class of foreign bodies, such as seeds, to swell and thus to complicate the case.

As very few people know how to properly syringe the ear, a few instructions concerning this apparently simple operation will not be amiss. The instrument used should be constructed of hard rubber; the piston should fit the bowl or cylinder closely, so as not to draw any air; the nozzle is to be conical in shape, with a slightly projecting tip. The ordinary glass instruments sold as ear-syringes are entirely useless for the purpose intended. While syringing, a small bowl or cup should be held close to the head under the ear to catch the water. The auricle is to be taken between the fingers of the left hand and pulled in a direction upward and backward, thereby straightening the passage of the auditory canal. The syringe should be worked with the right hand, and the water used should always be warmed. *Never, under any circumstances, should a liquid be put in the ear without first being warmed.* By the use of the syringe and warm water a foreign body may often be dislodged and brought away from the ear; the water gets behind the object, strikes the drum-head, and in returning tends to wash everything out. When a living insect finds its way into the ear, the patient should lie down, and have the canal filled with warm water, or a whiff of tobacco-smoke can be blown into it; the intruder is drowned or stupefied, and so rendered incapable of causing pain or disturbance by its fluttering motions.

Do not permit the introduction of probes, forceps or any instrument whatever into the ear, or any groping blindly in the dark for a foreign body that cannot be seen. Remember that, as a rule, a foreign body in the ear will do no harm if let alone. Certainly no one but the physician would be justified in resorting to any other measures than those just referred to. These are the words of Hinton, an English surgeon, which he has uttered to the profession: "Whenever an instrument will succeed, syringing will also succeed; and when proper syringing will not succeed, all instruments are full of danger."

DISORDERS OF THE MIDDLE EAR.

The disorders peculiar to this part of the ear constitute by far the most important class. It has been stated that fully five-sixths of the cases that

come under the notice of the aurist originate in the mucous lining of the throat, the nose and the middle ear. The treatment in these affections is attended with greater difficulties than is the case with those of the external ear, and the diseases are more likely to result in deafness. If, then, the middle ear is so often the seat of an impairment of the hearing, it may be well to inquire why this is so, and to enumerate briefly some of the conditions that give rise to these troubles.

Children's Diseases.—Many of the diseases incident to childhood, particularly those characterized by an eruption, leave trouble in the ear which results in impaired hearing or deafness. Scarlet fever takes the first place in the ranks of these scourges; but measles, diphtheria, cerebro-spinal meningitis, and whooping-cough may be the origin of serious disorders.

Cold in the Head.—A cold in the head may arise from an exposure to a cold draught of air which strikes the head or neck when insufficiently protected; from getting the feet wet; and particularly from sitting with wet or damp clothes for a considerable time in a cool place, as in a church or lecture-room. These exposures may give rise to other and more serious troubles than a cold in the head. If the nasal passages are affected, the ears are very likely to be involved, and the Eustachian tube may remain closed from a swelling of its mucous lining, or the catarrhal inflammation may extend up this tube to the drum-cavity; in either of which cases the result will be an impairment of the hearing.

Irritation from the Teeth.—The existence of earache, with a discharge of pus from the ear, during the cutting of the teeth in infants is a thing well known to those having the care and management of young children. In some cases, the ears are troublesome during the eruption of every one of the temporary teeth. The prevailing idea that the early decay and loss of the temporary teeth are of little consequence is a mistaken one, a statement which will be corroborated by every intelligent and educated dentist. The preservation of the first teeth until the period of second dentition arrives is quite essential to the growth and development of the alveolar processes. The regularity and soundness of the permanent teeth depend much on the treatment of the temporary set. The wisdom-teeth generally make their appearance about the eighteenth or twentieth year, though this period may be delayed on account of the crowded condition and small size of the jaws. In some cases, the wisdom teeth require years for their complete eruption, every few months setting up a fresh attack of pain and irritation as they endeavor to press their way through. During these attacks pain in the ear is a common symptom. The affections of the ear that arise from dental irritation are mostly located in the middle ear, and are generally attended with impairment of the hearing.

The drum-cavity is sometimes the seat of neuralgia, the pain being the most intense and agonizing in its nature, though there are no other symptoms peculiar to inflammation, and no deafness. The pain also intermits, is sudden in its onset, and disappears just as quickly, only to return without the least warning. These cases are almost invariably due to a carious tooth. In case of obstinate and persistent pain in the ear, unaccompanied by any other symptoms, the teeth should always be examined by a competent person. The tooth may not always be tender to the touch, and an improperly filled cavity may give rise to some trouble.

Chronic Nasal Catarrh.—As it has been noted that a cold in the head is prejudicial to the sense of hearing and a fruitful source of diseased ears, chronic nasal catarrh, or, more properly speaking, chronic nasopharyngeal catarrh, which is really an ever-present and aggravated form of cold, can hardly play a less important part in the production of changes in the organ of hearing which lead to an impairment of its function. The relation between the throat and the middle ear is so intimate that disease is scarcely ever met with in the drum-cavity without similar changes existing in the mucous membrane of the nose and throat. Any one at all conversant with the subject knows how often naso-pharyngeal catarrh produces ear-trouble, and one of our English writers speaks of aural catarrh as the commonest cause of deafness.

The Nasal Douche.—This is an instrument frequently used in the treatment of catarrh of the nose and throat; its use is often advised indiscriminately in all cases and without any special directions. Too frequently it has happened that this instrument, even when used with all the precautions that should be attached to it, has given rise to painful and acute inflammation in the drum-cavity, because the water or other liquid which is running through the nostrils forces its way through the Eustachian tube into the drum.

Bathing.—In diving or swimming under water, the ears become filled and then are generally the seat of unpleasant sensations and of possible injury; especially is this so if the water is cold. The delicate drum-membrane becomes inflamed, though the trouble does not often stop there but extends to the drum-cavity. In surf-bathing, the waves sometimes strike the head with great force, thus sending the water into the auditory canal and against the drum-head with sufficient violence to rupture it. In diving, the nose also is very liable to be filled with water, which, in the sneezing and blowing efforts that follow in its expulsion, may be forced into the drum through the Eustachian tube. Those who are afflicted with a disease of the ear, with any tendency to deafness, should indulge in bathing with considerable caution; the ears should always be protected by stopping them

with small bits of wool, diving being abjured and the head being kept as dry as possible. Such people should also refrain from having the hair cut too short or very often, nor should they accustom themselves to wetting the hair before combing it.

Such are some of the common causes of diseases of the middle ear. In treating the disorders peculiar to this locality, the attention will be called to those difficulties that are attended with an external discharge, and those not so marked. In both classes are recognized the acute and chronic stages.

SUPPURATIVE DISEASES OF THE MIDDLE EAR.

In an acute attack of inflammation of the drum-cavity, the first symptom usually complained of is pain, though in exceptional cases the first thing that the patient has noticed is a moisture in the canal from the flowing out of the pus, or a stain on the pillow from the same cause. Generally the pain in the ear and corresponding side of head is most intense, and is more deeply seated than when the inflammation is confined to the canal; nor is this passage or the auricle as tender to the touch. Deafness and singing or ringing sounds in the ear are nearly always present. If the pain lasts for any great length of time, there will be some constitutional disturbances, as fever, coated tongue, and loss of appetite. In young persons, there may be delirium, and the severity of the symptoms have often been attributed to inflammatory processes in the brain. There is probably no pain to which the human system is liable that is more severe than that due to the distension of the drum-cavity by mucus or pus. Marked changes are exhibited in the appearance of the drum-head, but such symptoms can be noted only by an examination of the ear with the proper instruments. The course of this disease is often violent until perforation of the drum-head occurs, which is sometimes accompanied with quite a loud noise and with relief from the pain. The rupture of the membrane is followed by a flow of pus, which at first may be slightly tinged with blood but soon becomes thick and yellow. If no measures are taken to cleanse the ear of this discharge and to prevent its further formation, the deafness will continue and the case will pass into a chronic suppuration of the middle ear, with a liability to all the evils that are so often entailed by this disease.

TREATMENT.—The treatment in the painful stage is similar to that which was suggested for subduing the pain when a boil forms in the canal. The ear should be syringed as often as every half-hour with warm or hot water, whichever feels best to the patient, generally the warmer the water the quicker the relief. Between the times of syringing, the canal may be filled with water into which a few drops of laudanum have been poured, to

be kept in by a bit of cotton. A pillow can then be heated and laid against the side of the face. Do not resort to poultices of any kind. In cold weather, the patient should stay in the house, and perhaps would be better in bed. Hot foot-baths are advised by some, though their expediency is somewhat questionable.

Aconite or gelseminum, given internally, may bring some relief; put five drops of the tincture of either of these remedies in about twenty teaspoonfuls of water, and take one teaspoonful every hour. These same medicines prepared a little stronger may be dropped into the ear.

If the pain continues after a trial of what has been recommended, the drum-head should be artificially punctured with a knife. This operation of course will necessitate resorting to professional skill. It is easily and quickly done, is not accompanied with any great amount of pain, and is devoid of danger. The relief from the pain is generally immediate, and the prospect of freedom from suffering should overbalance the fear of any momentary pain which would be caused by the knife. Another advantage gained by this artificial opening is the greater readiness in healing. The drum-head is almost sure to break of its own accord, if it is not punctured, and the opening is often large and irregular; in exceptional cases and after unusual prolongation of the suffering, the whole membrane has been swept away at the time of its bursting.

After suppuration has been established, the ear should be syringed carefully twice a day with warm water. Greater care should be taken in the use of the syringe here than in cases of impacted wax or foreign bodies in the canal, for now the drum-head is not entire and the water can enter the drum-cavity; hence, if the syringe is used too forcibly, or the water is not sufficiently warmed, dizziness, nausea, and even fainting may be induced. After the ear has been thoroughly cleansed, a weak preparation of carbolic acid, five drops to an ounce of water, can be dropped into it; or one of sulphate of zinc, two grains to an ounce of water. The remedies are to be used for checking the formation of pus; they should always be warmed before using, and about five drops of the dilution may be put into the ear.

In some rare cases, the inflammation does not cause a rupture of the drum-head, but becomes gradually absorbed after the acute symptoms subside. The worst issue is an extension of the disease to the brain, occasionally setting up ulceration and decay of the bone, and thus penetrating the walls of the skull.

Acute inflammation of the drum-cavity, if left unchecked, is liable to assume a chronic form. The discharge now becomes constant, though the quantity may vary somewhat; it may be thin and watery, or thick and creamy; its color is white, yellow or greenish; the odor is almost invariably offensive,

sometimes unbearable. The discharge seems to be acrid and corrosive, causing soreness and ulceration of the skin wherever it comes in contact with it. When such a condition as this exists, the drum-head is always perforated, and the continuance of the inflammation sometimes causes the loss of the ossicles; it can easily be understood that with these changes there must be a considerable loss of hearing. But the deafness that accompanies or results from a chronic suppuration of the middle ear is only one of the fearful consequences of this disease; life itself is not unfrequently jeopardized and in many cases has been lost. So true is this, that some English life-insurance companies, recognizing the magnitude of these dangers, refuse to take a risk on a person afflicted with a chronic discharge from the ear. Even if none of the serious consequences have occurred, the general health of the patient is nearly always impaired. It could hardly be otherwise, for such a continuous drain on the system as is occasioned by this constant flow from the ear is hardly compatible with perfect health.

For a long time a prejudice has existed in very many minds against the stoppage of a purulent discharge from the ear. This is largely due to the encouragement it has received from some members of the medical profession. There would be no hesitation in stopping a discharge and healing a sore in other parts of the body; but people of intelligence and education will oppose or regard with suspicion the most rational suggestions that are made for checking a discharge from the ear.

As stated before, deafness is only one of the consequences of a chronic suppuration of the ear; the formation of polypi, or small tumors that spring from mucous surfaces, may also result from an unchecked or neglected discharge. These growths are of a bright-red color; their surface is uneven and nodulated, very much like a raspberry; they generally grow from a little stem or pedicle; they may become so extensive as to project from the auditory canal, when they always occasion great deafness. A frequent discharge of small quantities of blood from the ear, or the staining of the pus with blood, is nearly always significant of the presence of a polypus in the drum-cavity.

The suppurative inflammation may extend from the drum back into the mastoid bone; sometimes a severe cold will cause such swelling of the mucous lining that the opening through the drum-head is closed and the discharge, prevented from escaping externally, forces its way back into the mastoid cells, and, setting up inflammation in these spongy cavities, gives rise to a very serious difficulty known as "mastoid disease." This is characterized by great pain behind the ear, which locality is also very tender to the touch. The skin covering the mastoid bone is red and often enormously swollen. The treatment of this disease is almost entirely of a surgical nat-

ure, and consists in making an incision through these swollen and infiltrated tissues down to the bone. In some cases an opening must be drilled through the outer layers of the bone into the cells themselves, to liberate pus that may be confined there. Disease or even ulceration of the mastoid bone is not always attended with fatal results; but other parts of the temporal bone are liable to an invasion of the disease. The roof of the drum-cavity consists of a thin plate of bone, and directly above this, and in contact with it, are the investing membranes of the brain, and any extension of the purulent disorder in this direction would give rise to meningitis or abscess of the brain, diseases that always terminate fatally.

Another serious complication is sometimes induced, known as blood-poisoning, which is caused by an absorption of the pus into the blood, in which it is carried throughout the system. This is very dangerous, though not always hopeless.

There are still other troubles that arise from a chronic "running" from the ear, but enough has been said to show the serious consequences that may attend this disease, and to emphasize the necessity of employing means for stopping this flow of pus and for restoring the ear as far as possible to a healthy and normal condition, always remembering that in this affection it is not only hearing, but often life, that is jeopardized. In a large number of cases a cure can be established, but only by persistence in a skillful and careful treatment, such as could be carried out under the direct supervision of some one entirely conversant with the details and accustomed to handling these diseases. The ear should be kept clean by the use of the syringe and warm water, and some simple astringents like alum, zinc sulphate, or carbolic acid, in solution, can be used as directed on page 279; but, if this does not accomplish the desired result, professional aid should be sought.

NON-SUPPURATIVE DISEASES OF THE MIDDLE EAR.

These are quite as liable to lead to deafness as those of the suppurative variety, but the trouble stops there, the invasion not extending further than the ear. They may have a well-marked course, signalized by symptoms so conspicuous that they can not escape the notice of even the most ordinary observer. For example, a person is exposed to cold on a wet, cheerless day, or becomes chilled from remaining too long in a swimming bath, or sleeps in the direct line of a strong draught of air, and the result is a sore throat or cold in the head. During this attack of cold he notices that the ears are not as they should be; the hearing is not quite as acute as before; he does not feel quite sure of what is said and asks to have the question that is addressed to him repeated. There may be some pain referred to the

bottom of the ear, though this is seldom as severe as in the suppurative cases, and is often entirely absent; there is a sensation of fullness, with a feeling as though the ear were stopped up; it seems almost as if one could reach something in the canal, whose removal would give entire relief; there are sounds in the ear like singing or the ringing of bells, and oftentimes a cracking or snapping is heard, especially when swallowing. The case remains in this state for a few days, when the cold gets better and most of the symptoms gradually disappear; the noises in the ear cease; the stuffy feeling is relieved; the hearing power seems to be restored, but if carefully tested is generally found to be slightly defective; in fact, the person has lost a small measure of his hearing. At this time the golden opportunity for curing the difficulty presents itself; the disease is not chronic, has not become fixed, nor has much change taken place in the middle ear. Each time the person takes cold or is exposed to the influence which gave rise to the trouble there is a repetition of the symptoms enumerated above, and a little more is added to the deafness.

This form of deafness often arises without any special warning; that is, there is nothing like a cold or any particular cause to which it can be assigned, the disorder creeping on in the most insidious manner and progressing to a considerable extent before the unfortunate patient is aware of its existence. This ignorance on the part of the person affected can be understood from the fact that the disease often advances much more rapidly on one side than on the other, and that when one ear has a fair degree of its hearing power a considerable loss may be sustained in the other without any knowledge of this deficiency on the part of the patient.

Not unfrequently a singing or ringing noise in the ear is the first intimation of any trouble, and an examination reveals the presence of the disease on both sides, much to the astonishment of the interested party. *Tinnitus* is the term applied to noises in the ear, and it often constitutes fully as distressing a sensation as the deafness, one from which the patient is as eager for relief. He thinks his hearing would be better if the noise could be stopped. These abnormal sensations are likened to a great many of the sounds occurring in nature, as the roaring of the sea, the rustling of autumn leaves, the buzzing of a mosquito, or the shrill chirp of a cricket; very often there is a pounding or hammering noise, which is in keeping with the action of the heart; sometimes the patient says he hears pleasant sounds like strains of music, though generally they are of a tiresome and distressing nature. Tinnitus is very apt to be worse when the person has a cold, or is suffering from bodily fatigue; he often thinks that the noise in his ear can be heard by others. This condition is one that can sometimes be quickly and easily relieved, but at other times it is very difficult to do much for it.

This disease, often called catarrhal deafness, is one of the most obstinate and intractable of all ear-troubles. It is seated behind the drum-head, in the drum-cavity and Eustachian tube; hence, no treatment can be of any avail that is applied through the auditory canal. What local means are used must be addressed to the throat and pharyngeal orifice of the Eustachian tube, through whose mucous membrane the lining of the drum-cavity, continuous with it, can be reached. The internal administration of some remedies, such as kali hydriodicum, mercurius dulcis, hydrastia and calcarea carbonica is to be recommended.

The attention should be called to a certain amount of care that a person afflicted with this disease can bestow on himself, also to some things the avoidance of which will tend to have a beneficial effect. Prominent among the influences that increase and aggravate this trouble is the exposure to and contraction of colds. No one can hope to enjoy entire immunity from colds, though they can in a great measure be prevented by a little care and attention. One of the most important measures to this end is proper dressing when going out. In extreme cold weather, heavy under-clothing should be worn; and most people will do well to wear two suits of flannel, particularly if going on a journey. One who is afflicted with catarrhal deafness should not sleep without an undershirt, though it is well to have a different garment for night-wear, and the greatest care should be taken to have all flannels thoroughly aired before wearing. In cold weather, the feet must be thoroughly protected and be kept dry and warm by means of overshoes and rubbers; nothing affects the ears sooner and in a way more prejudicial to the hearing than getting the feet wet. In the summer, out-of-door bathing should not be indulged in very frequently, and diving is to be strictly avoided. The hair should not be wet for toilet purposes; nor should the scalp be washed very frequently, and when it is a little alcohol should be put in the water, care being taken that the hair is thoroughly dried.

Tobacco and alcoholic beverages are to be used in moderation; better not at all. The same advice will also apply to indulgence in highly-seasoned articles of food. All these things have a stimulating action on the mucous membrane of the throat, and, through this, a pernicious effect on the hearing. In fact, everything should be done to regulate the general health in order to promote and maintain normal hearing.

If attention is given to a cold at the start or during its early stage, it can often be checked by some simple means available in every household. One of the best things is to remain in the house for a day or two, to stay in a warm room, to take hot foot-baths, and to partake of hot drinks freely, as lemonade. A few drops of tincture of aconite or spirits of camphor can

be dropped into a glass half filled with water, and a teaspoonful of the dilution be taken every hour. In some cases, quinine every hour, taken in doses of one or two grains, will have a good effect. These means will in many cases be sufficient to check or break a cold, thus averting many of the consequences it might have on the organ of hearing.

ARTIFICIAL AIDS TO HEARING.

A few words in regard to the use of instruments or artificial aids for the help of deaf people: It may be positively said that if the deafness is owing to nervous trouble, that is, an affection of the auditory nerve, no instrument will be of any use. In advanced cases of catarrhal deafness, some of the many appliances in the line of ear-trumpets, conversation-tubes or the audiphone, may be of considerable assistance, particularly in holding conversation with any one near by. Too much must not be expected from artificial help; there is very seldom an instance in which it will secure to a person with very much impairment of the function the ability to hear general conversation or a lecture, or sound at a very great distance. The instrument has not been invented that does for the ear what the spectacle does for the eye. In the selection of an appliance for the help of a deaf ear, the person has to be guided by his own sensations; each case is an individual one, and the best plan is to visit some maker of instruments and procure the appliance with which he can hear best. There are a number of small instruments made to fit in the auditory canal and be out of sight. They are often manufactured from silver or gold and are quite expensive but for the purpose of improving the hearing are entirely worthless. Artificial drum-heads are used in some instances with the most marked benefit; the cases in which they are useful are those in which the natural membrane is either entirely absent or has a large perforation. In catarrhal deafness the membrane and all the mucous tissues are abnormally thickened, and anything additional which is introduced into the auditory canal adds to the difficulty by acting as a foreign obstruction.



CHAPTER XI.

EMERGENCIES AND DOMESTIC SURGERY.

IMPORTANT HINTS.

CUTS, bites, blows, sprains, burns, stings, poisoning, bleeding, fainting, choking, drowning, suffocation, fractures, dislocations, and other misfortunes come within the daily observation of almost everybody, but there is a deplorable lack of intelligence in meeting them, often in treating even the simplest and most common. Their frequency ought to convince every one that it is his duty to give to them some special study, particularly to the more urgent.

An eminent German surgeon has said that he has very often lamented the fact that so few people know how to render the first aid to those who have met with sudden injuries, and further remarks that many die miserable deaths every year who might have been saved by prompt service if those near them knew how to give it. Though the gravity of the subject demands for it special study and attention, it is far from the aim to dispense with the services of the physician by the use of the present work. On the other hand, the same urgency which calls for a universal knowledge of these matters should show the reader that immediate professional aid is imperative in many cases. It is hoped that one may here learn how to preserve presence of mind and give the right kind of help until the physician arrives.

1. *Be Ready for Accidents.*—An emergency leaves little time to read directions for giving aid. *By studying a few minutes now* you can secure a preparation which will give you confidence and efficiency in many accidents of common occurrence. Read over this part of the book, especially what is said on Bleeding, Wounds, Bites, Fainting, Choking, Drowning, Suffocation, Poisons and Antidotes. One should read such directions repeatedly, that he may gain the greater familiarity. He will thus be more fully armed for emergencies.

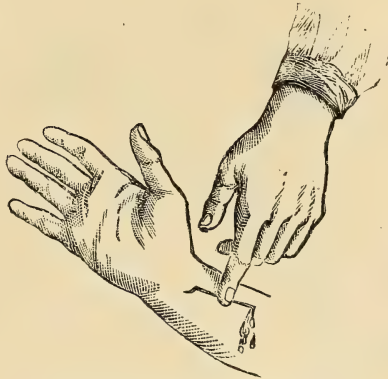
2. *Be Calm.*—If a case is urgent it certainly demands coolness. More good can be done in one minute with presence of mind than in ten without it.

Self-control in crises will be insured in great measure by an observance of the hint above on being ready for accidents.

BLEEDING: HOW STOPPED.

"It is a terrible position," says Professor Esmarch, the surgeon alluded to above, "to stand in view of some accident, to see the red blood pouring unceasingly from the wound, to see death every moment approaching nearer and nearer, and not know how to avert the threatened calamity." To gain a knowledge of this important subject the reader should first review the brief introduction on the circulation, Chapter V, noting especially "Circulation Described" and "The Pulse." He will there learn the general distribution of the veins and arteries, the serious nature of arterial or *spurting* hemorrhage, and see that a pulse-beat, wheresoever found, shows the presence of an artery.

When small arteries or veins are cut or broken, the bleeding will generally soon stop of its own accord by clotting. It is always well to aid this process by exposing the wound to the air. Further assistance may be given by applying cold water or cloths of pounded ice; and this expedient, since it contracts the blood-vessels and thus impedes circulation, is often alone sufficient. The pernicious practice of removing cloths when saturated with blood and then putting on others, or putting cloths on those already saturated, only makes the case worse.



57. STOPPAGE BY LIGHT PRESSURE.

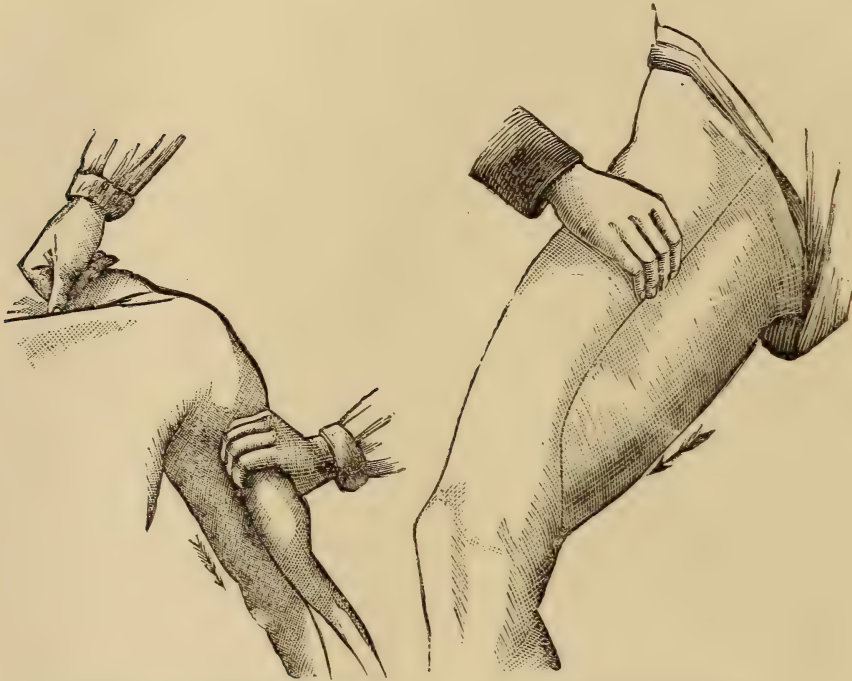
Stoppage in even severe cases may be effected by simply pressing the lips of the wound together, and thus closing the severed vessel until the clot forms. The circulation is thus restored just as one may bring the ends of a severed rubber tube together in the fingers so that a liquid may pass through, with little or no leaking so long as the ends are kept together. This method will be sufficient in the great majority of slight cuts on the hands and other parts of the skin. For some of the simplest wounds, as those on the face from the razor in shaving, carefully wipe off the blood and thrust down into the opening the point of a sharpened piece of alum. This will stop the blood if repeated until the severed vessel has been touched.

A tight girdle, garter, or other band will aggravate bleeding from a

vein, if it is on the side of the wound next to the heart. All such should be removed at once when they obstruct the passage toward the heart.

In serious bleeding, whether from an artery or vein, the above directions are not applicable, and pressure is needed.

Simple Experiments.—By proper searching and pressure with the fingers we detect pulse-beats, and thus learn of the existence of arteries, in the following locations:—1. On the wrist and forearm, back of the base of the thumb, between the shoulder and elbow, down between the two large mus-



58. ARTERY IN THE ARM AND SHOULDER.

59. ARTERY IN THE LEG.

cles; and in the armpit. These points are all in the artery that supplies the arm and hand. 2. In the middle of the groin; down the middle of the inside of the thigh; and on the inside of the ankle. These are points in the artery that supplies the leg and foot. 3. In the neck on either side of the windpipe; and on the temple. These are in arteries which supply the neck and head. 4. Just above the collar-bone, where the artery passes down behind that bone to supply the shoulder and armpit; this artery is continued by the one that goes down into the arm. It will be readily seen that 1 and 2 traverse the parts which are specially liable to injury in ordinary cuts.

Let one place a finger on the pulse at the wrist, and let another find the same artery further up toward the elbow and gradually increase the pressure. The pulse at the wrist will wholly disappear when the pressure above is sufficient, showing that blood does not pass the point where it is applied, and that a wound in the artery below that point would bleed little if any, so long as the pressure is continued.

Referring next to the various accompanying illustrations, perform similar experiments repeatedly on the other arteries until it has been thoroughly learned where and with how great pressure one should apply pressure when bleeding takes place in any part of the body.

Bandage, or Tourniquet.—When the required pressure is extraordinary, or must be long continued in waiting for a surgeon, make a bandage with a folded handkerchief, a cravat, suspender, or other strong material, with a sharp knot to fit on the point of pressure, and tie it loosely around the injured part. Slip a cane or other stick under the bandage and turn it around, *being sure the knot rests on the artery*, and so continue until the pressure stops the flow of blood. If the knot slips from its place and allows the flow to commence again, readjust it. As a substitute for the knot, one may put a marble or other hard body in the bandage. It is best to continue the pressure of the hand close to the wound, while an assistant puts on the bandage or tourniquet next to the hand. Some positions of these bandages and methods of their application are shown in the accompanying cuts.

Where to Apply Pressure.—If it is desired to stop the flow of blood from a *vein*, the pressure must obviously be applied *below* the wound, that is, on the side more remote from the heart; since the blood is flowing *toward the heart*. In an *artery*, on the other hand, since the blood is passing *away from the heart*, apply the pressure on the side next to the heart. If the bleeding continues after using one bandage, do not remove it if it is properly adjusted, but put on another further from the wound.

Persistent Bleeding.—If the flow is copious after the appropriate use of the above expedients, assistance can be rendered by thrusting the finger *down into the wound*, or by firmly binding cloths over it, *clean ones* if they can be secured. Such means may also be resorted to when the wound is in a part of the body where tight bandages cannot be applied, on the neck for example. Even in less urgent instances, these ruder methods can be adopted by those who have never studied any special directions for the stoppage of blood; or at any time when the course of the severed artery is not known.

Spider's Web, etc.—A good point is briefly made as follows by Professor Esmarch: "Above all things, I must earnestly warn you against using those remedies for stopping hemorrhage which are so often stuffed

into bleeding wounds, both those got from the chemist, such as perchloride of iron, yellow charpies, etc., and more popular remedies, such as spider's web. It is possible by such means to arrest trifling hemorrhages, but properly applied pressure attains this end much better. * * * * You find these styptics in some of the small packets used in giving 'first aid', but from their presence you may know that such packets have been put together by inexperienced persons."

Elevate the Wound.—As an experiment, stand a moment with one arm lifted above the shoulder, the other being left to hang loosely at the side. Then quickly compare the palms and you will see that the one which has been held up has less blood in it, as indicated by the absence of the redness so noticeable in the other. Thus we should, when stopping severe hemorrhage, keep the wound elevated so that the force of gravity may oppose circulation and thus materially lessen the pressure required to check the flow. If the wound be in the hand or arm, keep it up as high as a sling can conveniently hold it. If in the foot or leg, the patient should lie down and the limb be held up. If in the head or neck, he should remain standing or sitting. In general, keep the patient and affected member in such a position as will, in point of gravity, be least favorable to a flow of blood toward the wound, and avoid exciting him.

SPECIAL DIRECTIONS.

Bleeding in the Hand or Foot.—To check arterial bleeding in a finger, firmly apply pressure on each side, close to the hand, as shown in figure 60; a like pressure should be applied near the foot for a wound in a toe. If the wound be in the hand above the fingers, apply pressure at the point indicated in figure 61, thus cutting off circulation in the hand. For a wound in the foot, put the pressure on the inside of the ankle.



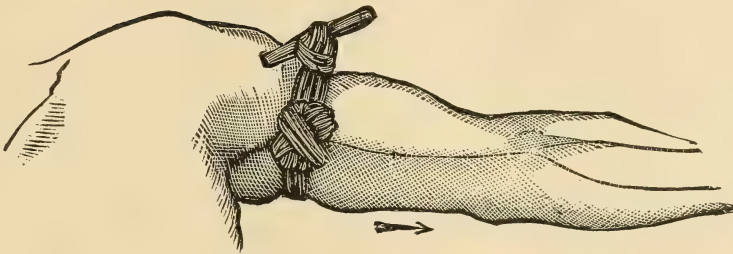
60. PRESSURE ON THE FINGER.

Bleeding in the Arm or Leg.—For a wound above the wrist, or one above the ankle, apply pressure as shown in figures 62 and 63. For injuries in the upper part of the arm, pressure may be secured by placing a thick stick between the arm and chest, and binding the arm tightly to the body, as illustrated in figure 64.

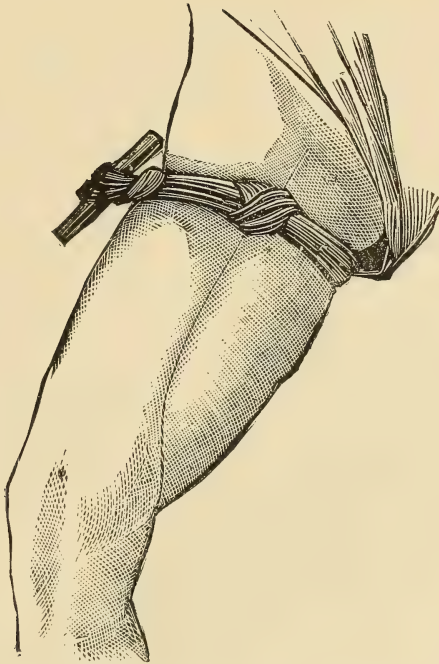
Bleeding at the Armpit.—If bleeding occurs in the armpit, or in the



61. PRESSURE ON THE WRIST.



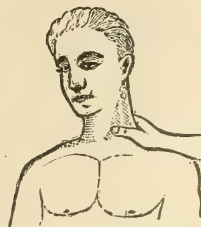
62. PRESSURE ON THE UPPER ARM.



63. PRESSURE ON THE THIGH.



64. PRESSURE UNDER THE ARM.



65. PRESSURE ON THE NECK.

arm above the points of pressure heretofore indicated, search out with the fingers the artery which passes down behind the collar-bone, and apply pressure with the thumb, or with any other body sufficiently covered to prevent tearing of the flesh, as shown in figure 58.

Bleeding in the Head or Neck.—Bleeding on the head is likely to be very profuse, owing to the great supply of blood-vessels. Undue alarm, therefore, should not be felt because of a free flow from a wound on the skull. The hard cranium near the surface makes it easy for one to close the severed vessel by pressure with the fingers. Bleeding in the neck, and in the head above, may be stopped or retarded by pressure on one side of the throat, or both, at the point indicated in figure 65. Such measures will be needed in attempted suicide by cutting the throat.

Bleeding at the Nose.—This is sometimes beneficial, especially after extreme heat of the body or a sense of fullness in the head. It may be allowed to continue until it clots of its own accord, if that is not too long. When it results from a blow, and when it is desired to stop it, keep the head erect, never bent down, snuff cold water and hamamelis, putting one part of the latter into two of the water; then apply cold water or pounded ice to the bridge of the nose, on the upper lip and the back of the neck. The above lotion may be thrown into the nose with a syringe. A strong solution of alum may be used if the other is not successful. Such hemorrhage is seldom so protracted as to be serious; but, if it continues in spite of attempts to check it, medical aid is needed. The formation of a clot is favored by any means that will prevent the escape of blood from the nostril, such as the plugging of the nose with cotton or soft linen. Such resorts, however, may cause the blood to escape into the throat, mouth and stomach. Blowing the nose removes the clots and thus favors the bleeding. If the disorder is caused by some serious internal injury, the escape of blood may be checked until the arrival of a surgeon by pressing against the nose.

Bleeding from a Tooth.—After the extraction of a tooth bleeding is occasionally serious. In such a case, apply hot or very cold water to the cavity. It may be necessary to plug it tightly with lint soaked in hamamelis secured by a pointed piece of cork well pressed into the cavity. A few drops of creosote dropped into the cavity will also be a good remedy.

Bleeding from the Mouth and Lungs.—Blood may escape into the mouth from the nose, as observed above, if the head is held erect or back when the nose is bleeding, or if the nostrils are plugged up. It is then often dark, as from a clot. It may be fresh and thin, coming from the throat, or bright and frothy and be from the lungs. In the last-named instance, it is more serious. In either case, it is well to eat salt, or inhale the vapor of alum from an inhaler or the spout of a tea-pot; or swallow small bits of ice. A

combination of these expedients may be adopted. Keep the head and shoulders well elevated, put cold applications on the chest, and preserve perfect quiet. See also "Spitting Blood" and "Vomiting of Blood," by reference to the index.

Undue Alarm.—Blood makes a great show, and the sight of it often causes undue trepidation. Almost invariably the amount of blood lost by a wound, except in the powerful spurting from the large arteries, is much less than is supposed. Hence, in stopping blood, keep calm enough to determine the course of the wounded vessel, doing the work as expeditiously as is consistent with exactness. You may not completely stop the flow, and yet you may so retard it until a surgeon arrives that the patient shall owe his life to your presence of mind. Excitement in an attendant will frighten the patient, and thereby stimulate the circulation. This will hasten the flow of blood besides increasing the chances of fainting.

WOUNDS: HEALING AND DRESSING.

HEALING.

A brief notice of the two ways in which wounds heal will show the importance of proper dressing. It will also explain how even some who have dressed many wounds have made as many mistakes, which have resulted in unnecessary soreness and unsightly scars. It should be observed that in all cases of wounds, however slight, scars are liable to be left for a life-time. It is inexcusable to neglect an injury because there are chances of healing without leaving a positive disfigurement of the skin. Small scars as well as large ones should be avoided, as they can be in many instances.

Two Methods of Healing.—First, a wound may heal quickly and without the formation of matter, leaving only a very fine scar. This result should always be aimed at, and can be secured only when the flesh has not been badly bruised or torn; when the skin around the edges is exactly brought together in dressing and not opened by the formation of matter or otherwise until the healing is completed; and when the injured part is kept quiet and completely protected against impurities and mechanical injuries. Second, the healing may be slow, with formation of matter, and leaving a large scar. Such an issue arises when the skin is not exactly brought together in dressing; when the surrounding tissues have been so torn or bruised that they decompose and slough off; when the edges, once properly brought together, are afterward separated by bleeding or the formation of matter; when putrefaction and formation of matter are induced by lack of cleanliness and of disinfection in the first dressing or in subsequent care; when the injured member has been disturbed by exercise during the healing.

Lymph and Pus (Matter).—We should carefully distinguish between two kinds of fluids which escape from healing wounds: 1. Lymph is clear and transparent, and comes to the surface in but small quantities in favorable instances, especially in the first of the above methods of healing. It is the natural medium through which the parts are united, *and is necessary in healing.* 2. Pus, or “matter,” results from a decomposition of any surplus of healthy lymph which may accumulate. If the tissue has been bruised, or is broken down in inflammation, this decomposed material we call by the same name, and the formation of pus, or matter, is known as suppuration. Pus may be yellowish, greenish, blood-stained or other color. Except in the most favorable instances, it makes its appearance even under a physician’s care. Since it opens the sides of the wound, and inflames or decomposes the tissues, *it interrupts healing.* If neglected, suppuration may lead to blood-poisoning, erysipelas, gangrene or other fatal consequences. Not only should pus and decomposed matter be studiously removed when present, but it should be known that, in addition to the causes mentioned above, their formation is induced or favored by the presence in the wound of splinters, pieces of cloth, bone, dust or other forms of uncleanness, by contact of the air after dressing, by bleeding when the wound has once been closed, or by disturbance of the affected part by exercise after being dressed.

Granulations and “Proud Flesh.”—When a suppurating wound or ulcer begins to heal, reddish, grain-like shoots known as “granulations” appear on its surface, gradually fill up the opening, and finally disappear under the scar. If these rise up and form a red, raw, elevated mass above the edges of the sore, they are then called “proud flesh.” Though granulation is nature’s way of healing a wound, some inexperienced people suppose it defeats that end and take measures to stop it. Only when it has taken the form of proud flesh should it be disturbed. It should then be repressed by passing adhesive straps over it and binding it down. By this means excessive granulations on large surfaces may be checked, and the sides of the sore be brought together. If the proud flesh has increased until it forms a long, protruding fungus, it must be cut off, or be removed with some caustic, such as blue vitriol or burnt alum.

DRESSING.

The better the dressing and subsequent care the smaller will be the scar. Special directions on dressing cuts, bruises, and the like, are given below in their respective places. Three general rules are here given.

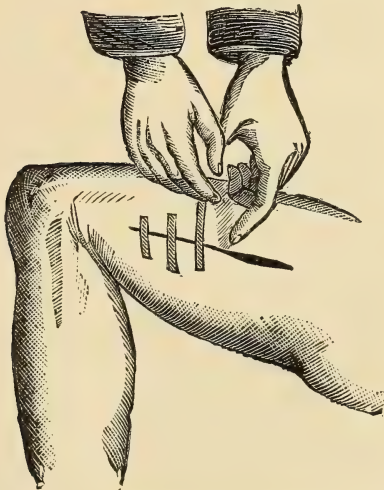
1. *Check the Bleeding.*—Stop the hemorrhage in one of the ways shown above. Meanwhile, if the flow is profuse, and particularly if it comes from an artery, summon a physician.

2. *Prevent Suppuration.*—If it is clear that the case may be treated without a physician, *remove and keep out all impurities.* Neglect of this precaution has led to suppuration and even death from slight injuries. No wound is so slight that it may be neglected. With the greatest pains remove all foreign substances and wash the wound in clean water, applied with a syringe or a piece of clean, soft linen, being sure that no lint and threads are left in the wound. It is well to mix some disinfectant with the water, such as carbolic, boracic or salicylic acid, or chloride of zinc. Even when waiting for a physician, it is best to keep over the wound a clean cloth soaked in such a solution. These disinfectants destroy the germs which may exist anywhere in the air, and which are supposed to produce decomposition and suppuration.

3. *Guard against Poisoning.*—Poisons of malignant kinds may enter the system through any wound, however slight the break in the skin. Such a result may be produced by contact of the injured part with mineral and vegetable poisons, with ulcers on men and beasts suffering from contagious diseases, with diseased and decaying animal matter, and with poisoned wounds in general. The best preventive, next to absolute absence of contact, is the washing of the hands or other parts exposed to contamination in a lotion of carbolic acid, or in strong alcohol.

CUTS.

Dressing.—When a wound is clean-cut, stop the blood, remove all



66. DRESSING WITH PLASTER.

foreign substances, neatly draw the edges together, and secure them thus with a bandage and pressure. This will be sufficient in nearly all the small cuts, as those inflicted with a penknife. If the bandage will not keep them *accurately* in place, an essential point, use plasters, but *never completely cover a wound with them.* Use narrow strips and as few as will preserve a perfect union, because suppuration will almost surely ensue if blood is confined in a cut by plasters. The *adhesive* plaster is the best, as it does not fall off when wet. Isinglass or court-plaster, or any sticking tab or stamp, if not poison or dirty, may be used, though none of these will be serviceable

with a wet dressing. In applying an adhesive plaster, cut a strip long enough to extend on each side of the cut far enough to maintain a good hold, *warm* (not wet) it, stick one end to the flesh, draw the sides precisely together, and then lay the other end smoothly down, at right angles across the wound if possible. Other kinds are similarly used, but are to be *wet* instead of warmed. If it is found, after smoothing a plaster down, that the edges are not in perfect conjunction, remove it and try again.

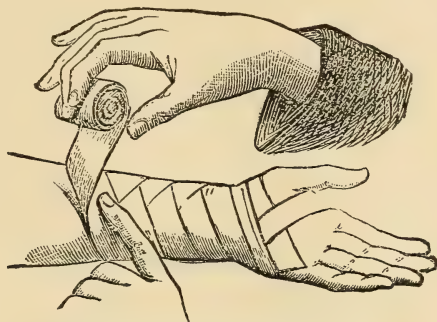
The adhesive-plaster dressing is one of the best known for clean cuts, especially those on the face and scalp; but it is imperative that the strip be applied evenly and with sufficient pressure to keep the lips of the wound precisely together. The plasters must be of a good quality and frequently changed in subsequent dressing; but in changing them one or two strips are to be removed at a time, the parts which they have covered being cleaned and new strips being put over them before others are removed. The aim of this careful change being to prevent the granular attachments of the edges from being drawn apart, each strip is to be gradually removed by gently lifting the ends, alternately a little at a time, toward the wound.

It is the height of folly to cut off pieces of flesh that hang as flaps. They should be cleaned, carefully restored to their natural position, and be thus secured. From the proximity of the skull to the surface, cuts on the head very often produce such flaps. Even if a piece of flesh has been entirely cut away, it may sometimes be restored by quickly cleaning it and binding it back precisely in its place. Such an end should always be aimed at, never neglected. Again, when a flap is formed or a wound gapes, none but a surgeon should use stitches, and he rarely, for they induce suppuration and may cause erysipelas or other serious disorders.

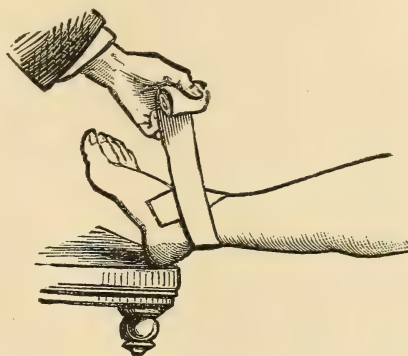
After the closing of the wound, put on two or more thicknesses of soft cloth (preferably a layer of absorbent cotton or lint), securing them with bands, or, still better, with pieces of plaster reaching from the cloth to the surrounding skin. Keep the cloth continually wet with cold water. If the injured part becomes cold, the water may be discontinued for a short time. If the pain is severe, use tincture of calendula, one part to four of water, instead of the pure water. This dressing is sufficient, and is better than liniments, salves, and the like, which are almost sure upon getting into a wound to produce suppuration, as other foreign material will. It may be necessary in addition to keep the injured part elevated in a sling. It is very desirable to exclude the air by keeping oil-silk over the whole dressing.

Subsequent Care.—Once in about twenty-four hours, oftener in warm weather or when there is much suppuration, the wound should be dressed. Soak the cloths in warm water and *gently* remove them. If the wound is neatly closed and no dirt or pus has collected upon it, put the cloths on and

keep them wet as before. If blood or pus is found, remove it with a soft brush or sponge, carefully avoiding disturbance of the wound or straps. Should a strap be loose, remove it *very gently*, one end slowly at a time, keeping it soaked in warm water; if it adheres very closely at any point and further removal threatens to open the cut, clip it off and leave the remnant

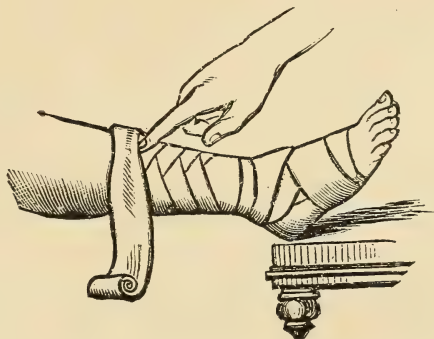


67. A. BANDAGED HAND AND WRIST.

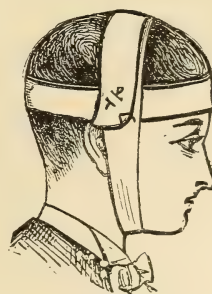


68. FIRST TURN IN BANDAGING THE ANKLE.

to come off at a later dressing; with soap and water sponge off the sticky residue left by the plaster, and apply a fresh strip. In all the dressings after the first, use only as much water as is necessary in removing the coverings and sponging off blood and matter (not lymph), *without freely washing*



69. LAST TURN IN BANDAGING THE FOOT AND ANKLE.



70. BANDAGE FOR THE HEAD.

the wound. Greasing the surface will aid in removing sticky residue of the plaster.

Arnica and aconite, in alternation, may be given for some hours if there are fever and throbbing of the parts. For much pain and swelling, with headache, give belladonna in alternation with aconite. Hepar is needed

after suppuration has set in, and silicea if the pus is unhealthy. If there are much heat, swelling, and pain, a bread-and-milk poultice may be used until relief is given, the above remedies meanwhile being administered as indicated. If poison has accidentally entered the system through the wound, from contact with diseased and decomposing animal matter, or from an ulcer on man or beast, give arsenicum. If lock-jaw ensues, follow the directions given in this book for that disorder.

In the dressing of wounds, as well as sprains and the like, the nurse is often at a loss to know how to apply bandages so as to make them remain in place and maintain pressure. It is manifestly impossible to here give directions for all cases, but the reader will gain from figures 67 to 70 valuable hints as a guide in the use of the most common ones.

BRUISES AND LACERATIONS.

In a *bruise*, some tissues are crushed, either with or without breaking of the flesh, as when any part is mashed or crushed. A *laceration* is a tearing of the flesh, and is generally attended with more or less bruising. Whether in a bruise with torn skin or in a laceration, the edges are more ragged than in a cut, and the bleeding is not so free. Owing to these two conditions, careful removal of all foreign substances and clotted blood and studious cleanliness in the whole treatment are specially imperative, for suppuration is almost certain to take place, sometimes deep down in the wound. Whereas a clean cut will probably heal readily, a bruise or laceration will heal more slowly and with more pain because the flesh is crushed. Hence greater care is needed.

In bruises without breaking through the skin, it is of the first importance to prevent the blood from "settling." For this purpose, *immediately* after the injury has been done apply cloths soaked in water as hot as it can be borne, and changed every few minutes from one hour to three according to the severity of the case. The same end may be met, wholly or in part by holding up the injured member, as the finger for example, and rubbing it back toward the body, when the location will permit. This kind of bruise should afterward be dressed as cuts, in the main. In place of calendula, use a lotion of arnica, one part of strong tincture in ten of water. If the patient is predisposed to erysipelas, use a lotion of equal parts of hamamelis and water, or Pond's Extract. These lotions should be applied by soaking lint or cotton in them and covering the whole with oil-silk to exclude the air. Aside from these special notes, treat lacerations and bruises substantially as noted above for Cuts, observing the same indications for the internal remedies.

PUNCTURED WOUNDS.

NAILS, GLASS, STABS, CROCKERY, ETC.

Punctures are wounds inflicted by pointed instruments, as knives, nails, forks, and others named above. Such injuries may be much more dangerous than the size of their openings at the surface indicates, for deep-seated tissues and organs may be pierced, or the flesh may be forcibly pushed apart and jammed together, while the external opening is too small to give a sufficient channel for the escape of blood and foreign substances. Indeed, some of them, especially the smaller ones, may not bleed at all, and being neglected for that reason, may result disastrously and even fatally. As another extreme, a large artery may be opened and death ensue at once.

In the treatment, severe bleeding should be checked. If this is excessive or persistent, or if other alarming symptoms arise, send for a surgeon. If the wound is deep and the opening small, a surgeon is then needed also to enlarge the opening. Should there be no bleeding at all, it will be well to forcibly suck the wound until a little blood escapes, then check it again. After stopping the hemorrhage, remove all foreign substances with the greatest pains. It is always best when possible to preserve the instrument that has inflicted the wound, so as to determine whether any part of it has remained in the flesh.

The dressing will be mainly the same as the above for Cuts. If a blunt instrument has inflicted the injury, the treatment will be more like that for Bruises, given above. Special pains need be taken to keep the mouth of the wound open *until healing has been completed from the bottom upward*.

Three Cautions.—Owing to the frequent occurrence of punctured wounds and the neglect too often attending them, we append three particular cautions:

1. Never neglect injuries from nails, forks, splinters, thorns, pieces of glass and bone, pointed instruments in general, or deep pricks of pins and needles.

2. Never leave foreign bodies in the flesh waiting for suppuration to take place and remove them. If you are unable to pull out a thorn, splinter, or other body, do not pick at it and thus increase the irritation, but open the skin and flesh along the whole length of the offending body and lift it out; then dress as for cuts. In severe cases, especially for the removal of a large splinter under a nail, visit a physician.

3. If a needle or part of one has been driven into the flesh out of sight, *do not try to remove it*, but send for a physician, meanwhile keeping the injured part *perfectly quiet*. The slightest movement of the wounded member will tend to drive the needle further in. It is for that reason that

this urgent caution is given, not because the presence of the instrument is attended with extraordinary danger. Indeed, needles have remained in the muscles for months and years, traversing different parts of the body without causing pain after their entrance.

BITES: MAD DOGS AND OTHER ANIMALS.

If there is no ground for suspecting that the animal is mad (for symptoms of madness, see Hydrophobia in the part of this book devoted to the animal inflicting the bite), treat as for Punctures, Bruises, or Lacerations, according to the character of the wound produced.



71. TO EXCLUDE POISON FROM THE SYSTEM.

If the animal is mad, or in the least suspected, prevent the blood from flowing from the wound toward the heart, as far as practicable. This is best done by *immediately* removing the clothing, when necessary, grasping the flesh with the teeth so as to take in the full depth of the wound, then pressing and sucking with all of one's might. Of course the spittle should be most carefully thrown from the mouth at once. Friends of the patient should abstain from this sucking if they have any break in the skin about the lips, or in the mucous membrane of the mouth, and should also prevent contact of the blood or other discharge from the bite with breaks in the skin on any part of their bodies. Such a precaution is not so imperative in the patient, since he has already been infected. In place of such a procedure, if friends can not suck the wound, or if the patient is alone and can not reach the point of trouble with the mouth, forcible pressure with the fingers may be resorted to. As soon as possible after the bite, a handkerchief or other ligature should be applied close up to the wound, as shown in figure 71, as an accessory means to the sucking and cauterization. This will check the flow of

blood back into the system and thus materially lessen the chances of that infection which often lurks in the blood, keeps the patient in constant dread that hydrophobia will set in, and thus produces a mental unrest that is most prejudicial.

After the above step has been taken, or when it is impracticable, thrust down into the wound some small iron or other metal, raised to a red (not black) heat, a white heat being still better, holding it there until the flesh all around and to the bottom of the wound has been thoroughly seared. A

live coal may be applied instead of the metal. A point of lunar caustic may be used for cauterizing but is not so good as the metal.

After the cauterization, sooner if consistent with a prompt and thorough observance of the above directions, send for a physician. Meanwhile keep the cauterized wound covered with compresses of water and belladonna. The physician should cut away the flesh, including all that the teeth touched, wash the wound in warm water, and freely syringe it and cover with pure carbolic acid. Afterward, keep up the belladonna compresses until healing is completed.

If the animal is only suspected of being mad, keep him confined until his actual condition has been determined, so as to remove doubt as to the person bitten being infected. It may be found that he is not mad. If he is known to be mad, kill him at once. For further directions, see *Hydrophobia in Man*.

Though the dog is most liable to be mad, the cat, skunk, fox, wolf, horse, cow, and other animals may be infected, and their bites will have the same general effect as that of the dog. Special precautions will, of course, be taken about the cat and other domestic animals. A goodly number of instances have been recorded in which the bite of the common skunk or polecat has produced madness of a more fatal type than that resulting from dogs. The animal being wild, one has less chance of knowing whether it is mad, so that it is always safer to treat its bite as one from a dog that is mad or suspected.

The scratch of a cat, fox, or other animal, or of birds of prey, may be as serious as a bite and should be treated as here directed.

BITES OF SNAKES.

If the snake is known to be not venomous, treat as for Punctures. If the bite is certainly poisonous, or if its character is in doubt, bind and cauterize as directed above for the bite of a mad dog and send for a physician, the patient not exercising enough to accelerate circulation. Meanwhile, if the wound is known to be venomous, give brandy or whisky, as strong as the patient can swallow it, a gill every fifteen minutes, or a less amount oftener, until intoxication comes on. In instances of very poisonous bites, several quarts of spirits have been drunk in a day with impunity. If it is not known whether the snake is venomous, give the spirits in less quantities, but very frequently; if the wound is not poisonous, intoxication will soon come on, and the liquor is then to be left off. If possible, the sufferer should be treated immediately after the bite, before he takes physical exercise, lest the poison become more active by hastened circulation.

BITES AND STINGS OF INSECTS.

Ordinary cases of bites and stings of bees, hornets, wasps, spiders, mosquitoes, and other insects cause little trouble aside from temporary pain and swelling. It is always best, especially in the worst cases, to suck the poison out of the wound. Then apply slices of onion, frequently changed, and the pain will speedily disappear. Camphor is good, as are also aromatic spirits of ammonia (applied on top of the wound only); extract of witch-hazel (*hamamelis*); lime-water; soda; wet mud; common salt, dampened and rubbed in; catnip, bruised or chewed, is said to be especially good for the bite of a spider. If a sting is left in the flesh, pluck it out before using any application. If it has gone down perpendicularly out of sight, place a key with a hollow stem over it, so that the opening of the wound will be immediately in the hole of the key; gradually bear down, and the sting will usually come out. If there is much swelling, give apis internally. For symptoms of fever, give aconite.

If the eye or other sensitive part has been stung, or if there are many stings, as by a swarm of bees, prompt treatment is demanded and a physician should be secured. If the system is deranged, even one sting may prove serious, and the ordinary bites of mosquitoes sometimes cause much fever and depression. The sting or bite of a scorpion, tarantula, or other venomous insect or worm should be treated as directed for Bites of Snakes.

To prevent trouble when exposed to insects, dilute carbolic acid is the best means to use, washing the exposed parts of the body in it once or twice daily. Soap rubbed on at night will keep away mosquitoes; it is almost or quite as effective, and not so disagreeable. Equal parts of oil of pennyroyal and sweet oil, frequently applied, is an excellent preventive when troubled by mosquitoes in the woods.

POISON IVY AND NETTLES.

After coming in contact with the poison oak, poison sumac, poison ivy (three-leafed poison vine), or even after being near them, some people are affected with itching of the skin, burning, swelling, and watery or mattery pimples. The affection is sometimes so bad that the parts are much distorted. This effect is favored by dew or other dampness on the leaves, as also by sweat on the person. Irritation is also caused by stings of nettles and other plants.

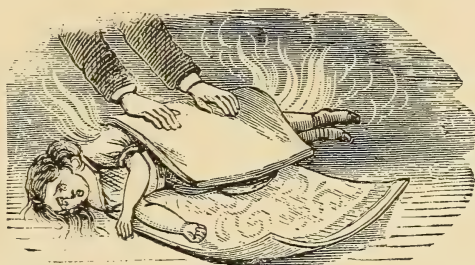
Different individuals require different treatment. Sweet cream rubbed on the parts is very useful. Make a lotion of a tablespoonful of cooking-soda and three pints of water, and keep cloths wrung out in it upon the

parts. If fever-symptoms come on, give aconite; belladonna, if there is much swelling or headache. Keep the body cool.

BURNS AND SCALDS.

CAUTION.—So many serious injuries result from fire in clothes, curtains and other fabrics that we recommend that in washing them, especially the clothes of children, the last water used in the rinsing contain some alum. This is a simple, cheap and convenient precaution, renders the clothes less inflammable, and may be the means of avoiding the saddest of accidents.

Unlike most wounds of the flesh, burns and scalds are serious in proportion to the *extent of the surface* affected, not to the depth. It is of much importance that this be known. If any tissues are destroyed, a scar will inevitably be formed, and according to the extent of its surface will “draw” the adjacent parts, producing disfigurement or even the greatest deformity, even though it be treated by a skillful physician. There is, therefore, a necessity for immediate attention, to keep down the scar as far as possible.



72. EXTINGUISHING A BLAZE.

In a burn, the first thing to do, of course, is to put out the fire. If it is in the clothing, the patient should not run about, since that will fan the flames, nor should he utter cries, for thereby flames or steam will be inhaled. By his own hands, or by friends who may be near, he should be quickly wrapped in a cloak, blanket, coat, rug, or other cover-

ing, and be rolled about. If a bed is at hand, it furnishes a good means, though it may increase the danger of setting fire to the house. Mere rolling on the floor or ground may be sufficient, and should always be resorted to, whether covering is at hand or not. Dashing water on the flame is not as reliable as the smothering mentioned, and should *never* be resorted to for the purpose of putting out the flames in a lamp, or in any fire where oil or acids can be scattered by the water, for it will then only increase the fire.

In extinguishing a fire and in cases of scalds, *keep the flames and hot steam away from the mouth and nostrils*, because their entrance into the lungs is attended with the gravest results. In addition to this precaution, the face, neck and hands should be protected as much as possible, because any subsequent disfigurement of these parts will be more conspicuous. After the flames have been quenched, pour water on any remaining embers

in the clothes. In cases of scalds, water should be poured at once on the injured parts.

In removing the clothing from the affected surface, which will always be done as soon as practicable after the above steps, cut it away with a sharp knife or scissors, so as to avoid all tearing or pulling of the skin or blisters; if any pieces of clothing adhere closely to the flesh, cut up to the skin and leave the patch. However slight the surface-injury appears, if very hot air or steam has been inhaled, summon medical aid at once, keeping the patient meanwhile in as comfortable a position as possible. Such aid will also be secured if the visible injury is severe and destroys any tissues, because ulcers will surely form, perhaps with gangrene, if not immediately and skillfully treated.

When simple redness of the surface is the only result, it soon disappears without treatment. If blisters form immediately under the outer skin, they should be pricked with a needle, and their contents be pressed out. For burns and scalds in general, an excellent remedy is made of equal parts of olive oil, or pure linseed oil, and lime-water, well mixed. Wet linen cloths in this and apply them smoothly to the parts, putting over them a layer of oil-silk to completely exclude the air. Renew the dressing when it becomes dry. A layer of fine dressing-lint or absorbent cotton, if obtainable, is preferable to the linen. When applied early and persistently, this lotion will often prevent serious ulceration and gangrenous conditions, and has, in the writer's experience, healed extensive burns without leaving scars, even when the skin has been destroyed. In the majority of cases it alone will be amply sufficient. In changing the cloths, the greatest care should be taken not to cause pain. This lotion will keep for an indefinite time and a bottle of it should be kept about the house. If the injury is deep and the sore is of an offensive odor, twenty drops of carbolic acid may be put in a pint of the olive-oil lotion before dressing the wound with it.

In the absence of the above remedy, and until it can be secured, temporary relief from pain can be found in applying flour, starch, or baking-soda to the part and covering with a wet cloth. The only effect of these is relief for the time being—by the exclusion of the air—and the same may be attained by applying soft wadding or any other dry, soft covering.

Avoid patent applications which are "warranted" to relieve pain at once, unless they are certainly known to be harmless, for they generally contain sugar of lead or other injurious ingredients which may be absorbed and induce grave results. In dressing, too, cotton or other cloths which can leave shreds in the wound should not be used.

Disturbances of the general system may ensue, more or less serious according to locality and extent, and the age and condition of the patient.

These injuries are most serious when affecting the trunk, and usually produce chilliness in infants and the aged, this being a dangerous symptom if persistent, and attended with an insensibility to pain. The nervous shock may bring on convulsions, lock-jaw, or other serious complications, unless remedies are used at once to reduce the nervous irritability. Give aconite if there is much fever. Administer it early, since it will allay the pain and moderate the reaction. Rhus also reduces fever and favors the healing of blisters. Arsenicum is needed when there is ulceration or gangrene, and for prostration of the vital forces. If the patient takes cold and the sore is very painful, red and swollen, give belladonna and rhus in alternation.

LIME, CAUSTIC, AMMONIA, POTASH, ETC.

Lime, ammonia, potash, and other alkalies, if brought in contact with the skin, may "eat" into the flesh and cause serious harm. If they be immediately brushed off, they may leave no injury. It is best, even after brushing them off, and in all treatment, to at once apply dilute vinegar or other acid. The resulting sore should be treated as for Burns. If the vapor of ammonia be inhaled, it will cause irritation and perhaps destruction of the membrane of the air-passages. In such cases, inhale the vapor of vinegar from the spout of a tea-pot for some minutes, and then inhale steam for a long time in the same or a like manner.

CARBOLIC ACID, SULPHURIC ACID, ETC.

Carbolic, sulphuric (oil of vitriol), nitric (aqua fortis), muriatic, and other strong acids are as destructive as the alkalies. Apply water at once to dilute the acid until it is harmless. Dirt from the ground is very useful and may be applied when water is not at hand. The alkalies mentioned above neutralize the acids, but their injudicious use in large quantities, or upon the parts not affected with the acids, will produce their natural caustic effects. Sores left by acids should be treated as Burns.

WOUNDS FROM FIRE-ARMS AND EXPLOSIONS.

If a bullet or slug has entered the flesh, a surgeon will be called to extract it and take charge of the case, measures being meanwhile adopted to stop the bleeding, as heretofore directed.

The reckless use of fire-arms, loaded with lead or slugs of any kind, is universally condemned, yet the accidents and deaths resulting from them are not more numerous or lamentable than those from the careless handling of the various toy cannons, pistols, torpedoes, fire-crackers, and other contrivances for the playful explosion of powder. The visible injuries are so slight

that they are very often neglected, and the consequence is that hundreds of lives are lost in this country on holiday occasions, generally among children. Fatal lock-jaw is the most frequent issue. If any metallic substance has entered the flesh, a surgeon will be needed to remove it, and indeed such service is demanded for any deep wound from the explosion of powder.

The treatment of such cases consists in stopping the blood, the removal of powder, dirt, bits of clothing, or whatever may be in the wound, with a rational combination of expedients named for Punctured Wounds and for Burns.

Explosions of boilers, gas, blasting, and the like, are liable to inflict wounds with flying irons, stones and timbers. The treatment should be selected according to the nature of the injury from the directions given for Bruises, Lacerations, and Punctured Wounds.

DROWNING.

HOW TO PREVENT IT.

Every one, old and young, should learn how to swim, since accident if not choice often exposes one to danger of drowning, and there are besides frequent occasions for assisting others when in the water. If such precaution has not been taken, one may be benefited by some common-sense observations at this point.

The body, without clothing, free from all weights, and before water has been swallowed, is a little lighter than the water which it displaces. It will therefore float, if kept in the *right position*, with the mouth *above the surface* to keep water out of the body. The reasonableness of the following directions for attaining these two ends will be apparent.

Do not throw the arms up, since that makes the body sink.

Keep the lungs full of air as much as possible, that is, draw in a long, deep breath, holding it in the lungs some time, then expelling it suddenly, and quickly begin to draw in as before. The air in the lungs serves as a buoy, and the body will tend to sink when it is expelled.

Keep yourself on your back, with the hands stretched *backward from the head, never in their natural position at the side*. This tends to keep the body in a horizontal position; the arms at the side will drive the feet down, and bring the person off the back. Do not be frightened so long as the face and mouth are out of water, as there is no danger of drowning, but regain composure to apply the above rules.

Caution about Cramps.—Many people, including the best of swimmers, are drowned because attacked with “cramp.” No warning is given of this involuntary contraction of the muscles and the sufferer sinks at once.

Those who have been engaged in laborious manual work or in any way exposed to muscular exhaustion, and those who are suffering from reduced vitality, are especially subject to it. Such persons, and all who are affected from exhaustion or weakness of the nervous system, as well as those who have painful, knotty cramps in the muscles when out of the water, should never voluntarily enter the water beyond their depth.

TO RESCUE THE DROWNING.

When trying to rescue a drowning person, it is of the highest importance, when possible, to assure him in a cheerful tone that he is safe, and to persuade him to cease struggling, since such efforts will make him swallow water and diminish the chances of rescue. It is senseless foolhardiness for a swimmer to seize one who is struggling in the water, since he will blindly grasp the rescuer on any part and almost surely drag him to the bottom. When he becomes quiet, grasp him by the hair, throw him on his back, give him a sudden pull so as to make him float, and start for the shore. In this way one swimmer has landed two or more persons after putting them afloat. When a body has sunk to the bottom, one should dive down and grasp it with one hand only, using the other to paddle back to the surface. If there is a strong outsetting tide or undertow, a rescuer, as indeed any swimmer, should throw himself on his back and float until help comes, for he will soon become exhausted by battling against such a current.

TO RESTORE THE DROWNED.

When one is apparently dead from drowning and has not been in the water long, there are many chances of restoration. Not a moment is to be lost. If three or more are present, one may be sent for a physician. If not, let all efforts be put upon the patient.

First, restore the breathing; second, *after* breathing returns, promote warmth and circulation. The following directions are Marshall Hall's Ready Method, with some important changes and additions.

Rule 1. Treat the patient *instantly on the spot*, in the open air, freely exposing the face, neck and chest to the breeze, except in severe weather. Loose the collar, cravat, braces, corset or other close apparel, so as to insure freedom in circulation and expansion of the lungs.

Rule 2. To clear the throat, mouth and nostrils from dirt, water, mucus, and the like, place the patient gently on the face with one of his wrists under his forehead, that all fluids and the tongue may fall forward and leave the entrance into the windpipe free. This point is insured by grasping the body under the abdomen, as shown in the cut, smartly jerking

the body up until the head barely touches the ground, holding it there for three or four seconds, and repeating the operation once or twice.

Rule 3. *Artificial Breathing.*—To excite respiration, turn the patient slightly on his side and apply some irritating or stimulating agent to the nostrils, as dilute ammonia, if it can be had.

Rule 4. Make the face warm by brisk friction; then dash cold water upon it.

Rule 5. If the means already mentioned do not effect restoration, place the patient on his back on a flat surface, inclined a little from the feet



73. CLEARING THE THROAT AND MOUTH.

upward; raise and support the head and shoulders on a small firm cushion or folded article of dress placed under the shoulder blades. *Keep the mouth open with a cork or stick, and the tongue out* by passing an elastic or other band over it and under the chin.

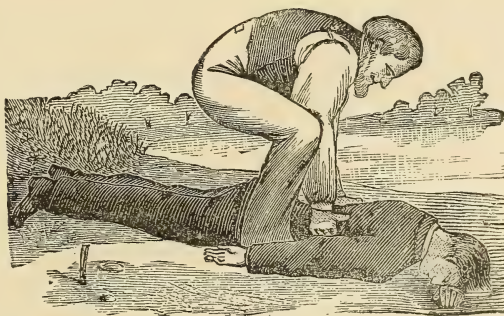
Rule 6. *To Imitate the Movements of Breathing.*—The operator, standing or kneeling behind or at the head of the patient, should grasp the patient's arms at or just above the elbows, and draw the arms gently and steadily upward until they meet above the head (this is to produce inspiration, or drawing air into the lungs), and keep them there for two seconds. He should then turn down the patient's arms, and press them gently and firmly for two seconds against the sides of the chest (this is to produce expiration, or pressing the air out of the lungs). If an assistant press with the palms of both hands the lower part of the ribs and diaphragm when the patient's arms are turned down, the expiration will be facilitated. Repeat these movements fifteen or sixteen times a minute. Though one operator can practice this method, it is best to have assistants when possible, and they should carefully act together. As the process of artificial respiration is very wearisome, the best qualified assistants should be selected



74. INSPIRATION.



75. EXPIRATION.



76. A PART OF THE MICHIGAN METHOD.

to exchange places with the operator; but the changing should be as rapid as possible, so that not a single respiratory movement may be lost. The operation should be persisted in and hope not be abandoned until it is certain that death has taken place. Life has been restored after several hours of laborious and seemingly hopeless toil.

If signs of life do not return in an hour, the operator will find relief for himself, and perhaps greater facility of restoration, by adopting one part of the "Michigan Method," as illustrated in the cut. Placing the body on the abdomen, with one wrist under the forehead, the neck straight, the tongue still out, and the passage open through the mouth and nostrils into the lungs, the operator stands astride of the back, puts his elbows against and inside the knees and his hands upon the sides and back of the patient's chest, over the short ribs. He now throws his weight upon his elbows and so presses the chest in, effecting an expiration, or expulsion of air from the lungs. After slowly counting two, he suddenly comes back upon his feet, grasping the shoulders and lifting the chest, thus opening it and effecting an inspiration, the air rushing into the lungs by its own pressure. A third hour may be used in the method above described, if life has not returned.

It is well for one to practice these methods upon a living subject, so as to better understand their philosophy and effects, and be the more expeditious when an emergency occurs. Its use is requisite in apparent death from suffocation, shock, lightning, poisoning, and other causes.

Too much pains can not be taken to keep all those who are not necessarily engaged in assisting completely away from all contact with the patient, in order that a full supply of fresh air may be insured. *This remark applies to all the cases of resuscitation which are to be treated in the following pages*, and should be heeded by all officiously "kind friends" in every case of urgency.

Rule 7. Circulation and Warmth.—After restoring respiration, wrap the patient in dry blankets, and begin rubbing the limbs upward firmly and energetically. The friction must be continued under the blankets or over the dry clothing. Promote the warmth of the body by the application of hot flannels, bottles or bladders of hot water, heated bricks, and the like, to the pit of the stomach, the armpits, between the thighs, and to the soles of the feet, if any of them are accessible. Warm clothing may generally be obtained from bystanders.

Strength.—On the restoration of life, when the power of swallowing has returned, a teaspoonful of hot water, *small quantities* of warm wine, warm brandy-and-water, or coffee, should be given. In some cases an enema of beef-tea and brandy is to be preferred, administered through the rectum by a physician. The patient should be put into a warm bed in a

room well ventilated, and encouraged to sleep. Great care is requisite to maintain the restored vital actions, and to prevent undue excitement.

The old practice of rolling the patient on a barrel, or in any way keeping the head down and working the body, is useless if not directly harmful and dangerous. It was supposed that such a procedure would pump water out of the lungs, but the fact is that the water does not enter the lungs in any such way as was assumed in former times.

HANGING.

In a case of attempted suicide by hanging, untie or cut the rope or strap immediately, not allowing the body to fall violently; open or remove the clothing; dash cold water *violently* and *copiously* upon the face, head, neck and chest. Then follow the directions given under "Drowning" for Artificial Breathing, Circulation, Warmth and Strength. Send for a physician if enough help will be left to work with the patient.

STROKE OF LIGHTNING.

When little or no signs of life are presented after a stroke of lightning, hastily remove the clothing; dash cold water on the body ten or fifteen minutes; wipe dry; then observe the foregoing rules for Artificial Breathing, Circulation, Warmth and Strength, under "Drowning." If sufficient aid is at hand, one should go for a physician. Keep up the efforts; restoration has been effected after an unconsciousness of an hour or more. Burns caused by lightning should be treated as directed for Burns. If flying splinters or limbs have torn or bruised the flesh, treat as for Bruises, Lacerations, and other kinds of wounds.

SUNSTROKE AND OVER-HEATING.

Gently open or remove the clothing at once, and pour cold water upon the head, neck and shoulders, to reduce the heat of the body. If the patient breathes feebly, or not at all, practice Artificial Breathing, as directed for "Drowning." See Sunstroke in a previous chapter.

CHOKING.

When anything has become lodged in the throat, two or three smart slaps should be given on the back just below the neck, meanwhile keeping the chest and stomach against a table or other firm body. If this does not remove it, pass the finger into the throat to the root of the tongue, bend it in the form of a hook and thus draw out the obstruction, if in reach.

Holding the body up by the heels and slapping the back has often proved effectual when other means have failed. Some cases, however, resist all means that are at hand, and a surgeon is required, as indeed in any continued choking.

When a pin or other sharp body is in the throat, efforts to dislodge it by coughing or by the finger should not be made. If the tongue is held down, the offending instrument can often be seen, and then removed with forceps or tweezers, or possibly with the fingers.

SUFFOCATION BY GAS.

Suffocation is caused by "choke-damp," carbonic acid gas, sulphurous, nitrous, charcoal, sewer, coal, illuminating, chlorine, and other gases, such as collect in old wells, caves, mines, vaults, sewers, and in rooms where coal is burning, or where illuminating gas is escaping. The chief danger in living apartments arises during the sleeping-hours.

In treating a case, bring the body quickly into the fresh air, strip off the clothes, particularly the collar and all bands or clothing about the neck, chest and abdomen that can conflict with breathing; dash cold water *rapidly and forcibly* upon the head, neck and shoulders, if the body is not already wet from lying in water. Then apply Artificial Breathing, Circulation, Warmth and Strength, as previously directed for "Drowning." If the person has been in water and become chilled, do not shower the body, but proceed with the other measures immediately.

Facts and Cautions.—Such gases, in general, are heavier than the air, and, if left undisturbed, tend to settle at the bottom. Hence, one may stand with impunity in some places, while sitting or lying would cause rapid suffocation.

On the other hand, these same gases may be made partially or wholly harmless upon being vigorously disturbed, and so diffused in the air.

Though no time should be lost in bringing a suffocating person to the air, caution is of the first moment, because the would-be rescuer will himself be quickly prostrated if he inhale the gas.

If the body is so near a door or other entrance that it can be dragged away while you hold your breath, fill the lungs deeply with pure air, rush in and bring out the body, holding the breath meanwhile, or letting it escape gradually, but *never* "taking a breath" while exposed to the gas, for suffocation is often instantaneous.

If the body can not be so readily removed, knock in the windows and doors to produce a draught of air. If this can not be done hastily, or even while others may be making such openings, cover the mouth and nose with

a cloth wet in water, or, still better, in vinegar, and then enter for the body. The cloth keeps the gas from entering the lungs rapidly, thus enabling one to remain the longer. Vinegar partially neutralizes the gas.

If one has become helpless or unconscious from gas in a well, mine, cave or pit, hastily provide means for lowering some one, and meanwhile disturb the gas at the bottom as violently as possible to cause its diffusion. This can be done by lowering an open umbrella by the handle, or any vessel of similar shape, and quickly bringing it up again; or by throwing down quantities of water, or branches of trees, or burning paper or straw, if quite sure that the body will not be burned—anything to make the gas less noxious. The assistant who descends should have his mouth and nose covered with a cloth wet in vinegar or water, should have a cord secured around his waist, and be provided with a signal-cord, one end of which he will hold all the time, the other being in the hand of some one at the top. Signal-jerks should be made on this cord from above every second or two, and if a response is not given at any time, the person will be understood as suffering from the gas, and be immediately brought up. If not overcome, he will tie the body with a cord let down for that purpose, and will be then elevated along with his burden.

Never take an open light into a room filled with illuminating gas, lest an explosion occur.

If burning straw, paper or shavings be thrown into a sewer or privy-vault to dispell the gas, be careful to avoid burning your person, for such gas is highly explosive.

If a light is put out upon being lowered into a well, pit or mine, it is an evidence that life cannot be sustained therein; but if it still burns, that is not an invariable sign that it is safe to enter, since the flame will continue in sulphureted hydrogen, one of the most fatal gases to be found in such places. Since this test is not absolutely reliable, it is best in all cases of doubt to observe the above precautions as to diffusing the gases.

Great care should be taken in opening drains and privy-vaults that have been long closed, because the gases escaping therefrom are very poisonous, sometimes fatal. It is better to throw into such openings chloride of lime, or common plaster-lime mixed with water.

FAINTING.—SWOONING.

Fainting is more common when the nervous system is deranged or weakened. It may result from the sight of blood, a wound, suffering in general, excessive joy, fright, or other violent emotion, or from other influences seemingly trivial, and it may come on without warning or apparent

cause. The pulse and breathing become weak, or are wholly absent; the patient grows pale, loses muscular power and sensibility, and falls if not supported. Restoration is generally easy. Immediately place the body on the back, simply lowering the chair backward if the patient is sitting, keeping the head on a level with the feet, or an inch higher, and sprinkle or rub cold water on the face. The upright position is positively dangerous. Camphor, cologne, or ammonia water may be placed under the nose. Give water to drink when sufficiently revived.

If fainting accompanies a disorder of the heart, give digitalis after restoration. If a fright is the cause, give aconite. If there is pain in the head, give aconite and belladonna in alternation. Give ignatia or colocynth if grief, indignation, or the like, is the cause. In general, when one feels faint, he should lie down at once.

If fainting results from a fall, blow, weakness from loss of blood, or other violence, proceed as directed for Shock.

SHOCK.—UNCONSCIOUSNESS.

FALLS, BLOWS, COLLISIONS, ETC.

From similarity of symptoms, a mild shock is easily confounded with fainting. Indeed, it is only the more severe forms which present signs materially different from those of the latter; yet the nature and causes, by our classification, are different. A shock is an actual depression of the physical, nervous or vital energies, and results from falls, blows, burns, wounds, poisons, loss of blood, collisions, whatever indeed can occasion an overwhelming disturbance of the functions of any part of the body. It is favored by a debilitated state of the system, and resists restoration in proportion to that debility. More or less of the following symptoms are present, according to the severity of the shock: Face usually pale, but sometimes flushed; eyes closed, or wide open; breathing weak, sometimes snoring; pulse feeble; cold perspiration; blood lost by a flow, or by spitting; perhaps sickness, vomiting, unconsciousness and apparent death. A frequent symptom, or rather form, of shock is being "knocked out of breath." After an accident, one may feel no inconvenience for some time, until reaction sets in. Indeed, it may be days or weeks before he learns that some obscure injury has been inflicted. Again, there may be great disquietude and depression, as in exciting emergencies. The shock may be even fatal.

In such an emergency, insure a full supply of fresh air. If there is bleeding, stop it by methods already given. For injuries to the flesh, use arnica internally and externally; its internal use is needed for flushed face

and anxiety; shivering and trembling; dizziness and sickness. Give *veratrum viride* for general coldness and clammy feeling of the body; relaxation of muscles; pain in the head. Opium is indicated by snoring in the breathing; red face; quivering lips; free perspiration; and if fright attends the shock. Give *aconite* for threatened fainting, with palpitation of the heart; flushed face; staring eyes; or if fever sets in during reaction. If in the reaction there be red, bloated face, hard breathing, headache, or marks of delirium, give *belladonna*. *China* is needed for prostration from loss of blood, used alone, or in alternation with *arnica*. Give *chamomilla* for nervousness and pain; *ignatia*, if there are hysterical signs.

In severe cases, keep the patient on his back, as comfortable as possible, with the head on a level with the feet, or not more than an inch higher if the face is *pale*, but well elevated if the face is *flushed*. Put on warm covering, apply hot bricks or bottles to the extremities and stomach, and rub the hands, feet and other cold parts *under the clothing*.

To be sure, a wound, bleeding, or the like may prevent the full adoption of these means. If there is vomiting, let the patient swallow bits of ice. Should breathing be very feeble or wholly absent, use the means for Artificial Breathing, Circulation, Warmth and Strength, under "Drowning."

When unconsciousness comes on without a known cause, put the patient on the back, with the head on a level with the feet if the face is pale, but well elevated if the face is red; use the hot applications and rubbing as just directed, if the symptoms indicate; or proceed as for Fainting, if the circumstances described in the last section above call for it.

STUN.—CONCUSSION OF THE BRAIN.

It is a frequent occurrence for a blow or other injury on the head to make the sufferer unconscious or insensible. The condition may vary from a slight stun to loss of life and necessarily requires immediate, rational attention. The patient is unconscious, pale, cold in the extremities, and with the pulse weak or entirely imperceptible. The breathing, if not entirely stopped, resembles a snore. If shaken and spoken to in a loud tone, the patient may answer, but is inclined to relapse at once into unconsciousness. He should not be so aroused, as it lessens the chances of recovery. After a time, reaction comes on, if the injury has not been too great, this stage being generally marked by vomiting.

In treatment, place the patient in a warm bed, with his head quite low, and apply warmth to the extremities, under the arms, and between the limbs. He should be allowed to remain quiet, without any effort to arouse him or give him active treatment until reaction has taken place. When

this comes on, the head may be raised and cold applications be put on it. Keep the room cool, quiet, with modified light, and free from loud talk and other noise. Strict care should be continued several days to prevent inflammation of the brain or other bad result.

Arnica should be given internally and applied externally when the difficulty has been caused by a blow or fall. Aconite, in alternation with arnica, is needed if there is much fever; belladonna, when the face is flushed, the eyes blood-shot, and there are headache and other symptoms. For delirium of any kind, give hyoscyamus.

FROST-BITE.—FREEZING.

The fingers, toes, ears, nose and lips are specially exposed to "frost-bite," which makes them stiff, hard, and white. This condition develops as circulation declines. At first, the part becomes puffy, bluish and smarting, then turns white, hard and insensible, the patient perhaps not noticing these changes, because relieved of the stinging of the cold. Such a condition should be promptly treated with applications of cold, in a room of cold temperature. If not attended to at once, the injury will become severe, and death in the tissues will ensue, resulting in sloughing and deformity. At first, apply snow or pounded ice until the part softens; then ice-water, and as the injured tissue becomes pliant, the temperature of the application may be raised until circulation is wholly restored. *Under no circumstances* expose the parts to a warm temperature or application until they become pliant, as that will favor sloughing and deformity.

What happens to the separate members in this way may affect the whole body, and the person perhaps be "frozen to death." This condition progresses as in the parts named above, on a larger scale. There is, however, an almost irresistible inclination to sleep, which should be stubbornly withstood, and the patient be kept in motion. If one has thus become insensible and is brought into a warm room, death will almost surely be the result. He should be carefully removed to a cold room, and the clothing be gently removed. Then cover the patient for ten or fifteen minutes with snow or ice-water. After that, rub thoroughly for hours, using means to produce artificial breathing at first (see on Drowning), if natural respiration has ceased. In the rubbing, use cloths wet in ice-water and studiously apply the friction to all affected parts. If consciousness begins to return, and there is no part in which sensibility is absent, slowly raise the temperature of the cloths and room, not letting them become actually warm. Restoration will be favored by the patient smelling camphor or ammonia. By this process of treatment, when patiently carried out, restoration has

been secured in those who have been some hours apparently dead. When the patient is completely restored, give him small draughts of coffee and cover him with warm clothing. The diet may be gradually increased by adding gruel and beef-tea.

In handling any stiff, frozen tissue, great care should be taken not to break it. This misfortune may be brought on more easily than most people think, especially in feeling and bending an ear, and will, of course, result in serious soreness, perhaps loss of the part.

To be sure, if the patient has become insensible, immediate aid of a physician is needed, as it is, indeed, for any serious action of the frost.

STARVATION.

If one is unconscious from starvation, or in any way unable to swallow, inject into the bowels small quantities of warm milk with a little brandy or wine in it, and lay over the stomach cloths wet in the same. When the patient can take it, give milk, only drop by drop at first, gradually increasing to a teaspoonful. Then a very little beef-tea may be given. After the patient has slept, not before, he may have a very light meal. The almost universal danger is that too much food will be given. A very little, feeding it often, is the safe and rational rule.

CONVULSIONS.—FITS.

If epilepsy is known to be the cause, consult the treatment of that disorder in this book, first putting a cork or stick between the teeth. This precaution as to keeping the teeth apart should be observed in any case in which there is danger of injury to the tongue. For other directions, see this subject in a previous chapter, as found from the index.

APOPLEXY.

When one suddenly falls in unconsciousness, and with flushed face and deep breathing, lift up the head and shoulders, call a physician, and consult the article on Apoplexy in Chapter III for further particulars.

DIZZINESS.

When feeling dizzy, lie down, or if that is impossible, sit down. Keep the eyes closed until the symptoms disappear. If dizziness comes on while one is climbing or otherwise ascending to a lofty elevation, he should keep the eyes directed upward. If one falls down when feeling dizzy, treat as

for Fainting, Convulsions, Epilepsy, Apoplexy or Shock, according as the circumstances indicate one or another of these.

FRIGHT.—EXCESSIVE EMOTIONS.

Violent mental emotions are generally neglected because they do not cause fainting or other startling symptoms; yet they may produce serious results, and their effects should be reduced or arrested as far as possible.

Opium should be immediately administered after a fright, followed by aconite if the effects continue. Ignatia is preferable for oppressive grief or indignation, and is also needed after opium and aconite if convulsions set in during their use. For violent or excessive anger, give *nux vomica*. *Coffea* is as good a remedy as can be found for sudden or immoderate emotions in general. *Pulsatilla* is superior for fright, fear, or timidity of disposition. *Bryonia* is indicated by coldness, shivering, irritability and nausea after a fit of passion. In any case, remove the exciting cause.

CRAMPS IN THE MUSCLES.

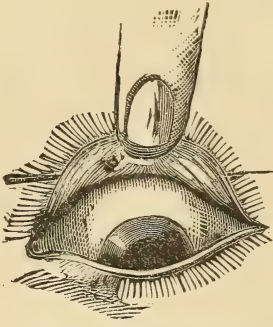
Painful cramps may attack parts of the body, and the muscles be suddenly drawn up into a knot. They seem to be constitutional in some persons, though generally occurring after exhaustion, muscular or nervous, more commonly the former, and sometimes result from the use of stimulants. If the cramp be in the leg, relief is given by jumping up and throwing the weight of the body on the affected member. If it is in the arms, grasping something with all of one's might, lifting or pulling, will drive it away. In other cases, or in connection with the above, vigorous rubbing is very beneficial.

Give a dose of *veratrum album* every evening if cramp often occurs in the night; or *rhus* in the morning, if the attacks come on in the day while sitting as well as when in bed at night. Follow with sulphur to eradicate the tendency. *Calcarea* is needed if simple stretching out of the limbs brings on the cramp; *nux vomica* if there is numbness or rigidity in the limbs for some time after the cramp.

FOREIGN BODIES IN THE EYE, EAR, AND NOSE.

The Eye.—A cinder or other foreign body in the eye may be washed out by the increased secretion of tears which its presence causes. Water applied with the hand may be sufficient. Or it may be wiped out with a moistened piece of linen or silk, a feather, or a bristle formed into a loop. If such expedients are not successful, the lid may be turned back over the

end of an eating-knife, or over a small wire, as shown in the cut, when the rolling of the ball will usually reveal the offending object to view in such a way that it may be removed by some of the means named above. It may have become so imbedded that the point of a needle must be used, with



77. FOREIGN BODY IN THE EYE.

delicate care, to remove it. If the obstruction adheres to the upper lid, perhaps it will be removed by holding up that lid and then attempting to close the eye. The lower lid is thus brought up under the upper and may brush away the object. If inflammation results, wash the eye out with cold water, to which may be added arnica or Pond's Extract, ten drops of either to a half-teaspoonful of water.

If lime, potash or other alkali has entered the eye, do not stop to remove it, but put into the eye dilute vinegar or other acid. Consult a physician as soon as possible if the case is at all bad. For further directions on foreign bodies in the eye, see Chapter X.

The Ear.—If an insect enters the ear, it may cause much pain. Turn the affected ear upward, by throwing the head on one side, and pour in warm water. Let it remain a moment, then raise the head and let the water come out, assisting the escape by taking hold of the upper tip of the ear and lifting it a little. Repeat the operation if not at first successful. A syringe may be used, though pains should be taken not to insert the nozzle or tip deep into the ear. No other instrument should be put into the ear except by a skillful physician, and an aurist is always to be preferred. In the case of an insect in the ear, it may be well to blow tobacco smoke in on it first, to stupefy it. With the exception of the last remark, the directions given will apply to all foreign bodies, with a special caution added about using water on such as will swell when moist, as grains and seeds. Fuller notes on this subject with just cautions on the use of instruments are given in Chapter X.

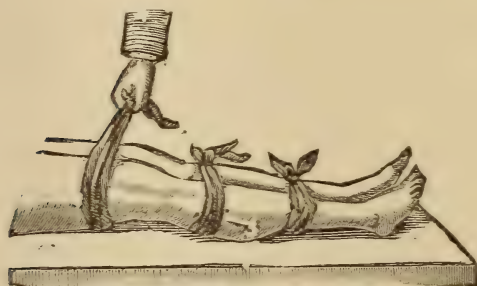
The Nose.—Children often put buttons, beads, and the like in the nose, thus subjecting themselves to much inconvenience and, in the case of infants, to pain whose cause may be pointed out only by the ensuing inflammation. As treatment, close the free nostril by pressing against it, and have the patient blow through the obstructed one. If unsuccessful, let the child close the mouth and unobstructed nostril, after taking a full breath, and strike the back smartly with the palm of the hand. When an obstruction is to be removed with an instrument, place the finger above it firmly, on the outside of the nose, so that it may not be pushed farther up. Then

gently shove an oiled wire hook or forceps up around it and slowly withdraw it. If reasonable efforts are not successful, go to a surgeon before inflammation and swelling become bad.

FRACTURES.

A fracture of a bone is generally caused by a fall, blow, or other mechanical injury, but may result from violent muscular exertion and, in old people, from a diseased condition of the bone. It is attended with a snap felt by the sufferer; by bending or shortening of the limb; by grating of the ends of the bone when worked against each other; sometimes by protrusion of the bone through the skin. There is usually severe pain, with loss of power of the injured part.

A surgeon must be summoned, of course, or the patient be taken to one. Friends often betray too much eagerness about getting such aid immediately. Much more time may elapse without bad result before a bone is "set" than is generally supposed. As a mistake in the first dressing may result in a life-long deformity, time should be taken, even if it takes a day or two, to secure a surgeon of known skill. Meanwhile the bone, without any attempt at setting it, should be placed as nearly as possible in its natural position, and so



78. SECURING A FRACTURED LEG.



79. A SLING FOR THE ARM.

secured. In case the patient is to be moved from the place of accident, and it is a leg that is broken, bind together the two limbs by a bandage around the ankles, another just below the knee, and a third above the knee, as in the cut. A fractured arm should be placed in a sling and be tied to the body with bandages. Broken ribs must be held with a broad bandage applied smoothly around the body. This also gives much relief by lessening the action of the chest in breathing.

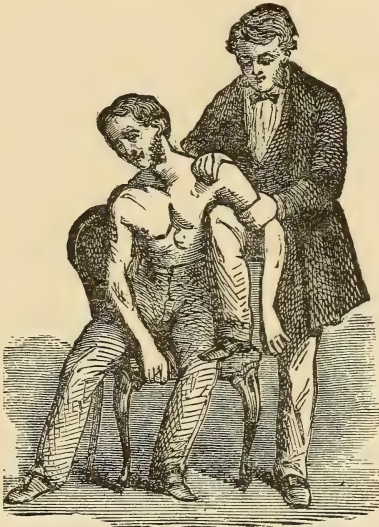
The patient should be laid on a stretcher, cot or other like appliance,

so that twisting of the limb may be avoided as far as possible. Such a means of transportation causes less jarring than a wagon, but may not be practicable if the distance is great. Particular care should be exercised in the moving, not only to avoid pain, but also to prevent forcing the bone through the flesh. The bearers should use moderation, remembering that no advantage is gained by haste, while much injury may be caused.

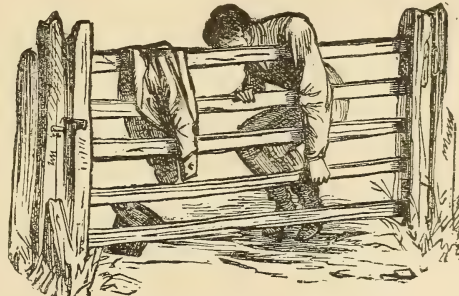
DISLOCATIONS.

In a dislocation, a bone is pulled or wrenched out of the socket, with much straining of the ligaments. However successfully treated, it is weaker than before, and much less violence will produce a second dislocation. It is caused by mechanical agencies of different kinds, and is marked by a swelling on the joint (caused by the end of the bone), by shortening and twist-

ing of the limb, loss of the use of the limb, great pain, and swelling. A surgeon should be secured before the swelling has advanced far, if one of real skill can be called so soon. In other respects, the remarks on Fractures are the directions that are needed here.



80. REDUCTION BY AN ASSISTANT.



81. REDUCTION BY THE PATIENT.

Since it is important to effect a reduction of a dislocation before inflammation has advanced far, two cuts are here given for directions in the absence of a surgeon. They may be tried for a reasonable time, the joint being turned at various angles while firm pressure is applied.

SPRAINS.

When a ligament or tendon has been twisted or over-stretched, there is usually a rupture of some of the fibers, resulting in severe pain, inflam-

mation, and perhaps nausea. Such an injury occurs most often at the wrist, ankle or knee. The best treatment is pressure by means of adhesive straps applied firmly and evenly over the surface and renewed as soon as they become loose. If such means are not at hand, apply cloths frequently soaked in water as hot as it can be borne, until the straps can be applied. If the sprain be so located that it does not admit of the use of straps, a lotion of arnica, aconite, rhus, or hamamelis may be put on with cloths, oil-silk being put over them.

Care should be taken for some weeks that the injury be not repeated, since the case would then be difficult and tedious in treatment. In a twisting of the ankle, there is special danger of breaking the small or "splinter" bone of the leg, and a surgeon should be at once consulted in any severe sprain of the ankle. Give perfect rest to the injured part.

STRAINS.

By a strain is meant the undue stretching of tendons or muscles by violent exertion, perhaps tearing them asunder. We thus distinguish it from a sprain, which is caused by an unusual tension or twisting in the ligaments of a joint. As in the latter, a strain may be attended with a fracture of some small bone and thus cause unexpected trouble. Hence, if there is much pain, surgical advice should be secured at once to determine the extent of the injury. The treatment consists, first of all, in giving rest to the injured part, the patient lying down if the back is affected. An external application should be made twice daily of rhus, arnica, or opodeldoc. Bryonia internally is needed for sharp pains in the back after unusual or sudden exertion; rhus, for headache, or for persistent pains in the back; nux vomica or veratrum, for sickness or great pain in the bowels. Complete rest is absolutely necessary.

RUPTURES.

In a previous chapter it was stated that the intestines are surrounded by a wall of membrane. In consequence of weakness in that membrane, a mechanical injury, violent exertion, as in lifting, running, leaping, riding, straining at stool or in urinating, this wall may be broken and allow a portion of the intestines to come out and press against the skin, causing a peculiar pear-shaped protuberance. This is called rupture. Such a condition is more common in and below the groin and in the scrotum; but the intestine may protrude at the navel or in the rectum, not being easily noticed in the last instance. Generally the bowel can be returned to its place, but sometimes not. Again, the opening may be so small as to press upon or "strangulate" the protruding intestine, interrupting its circulation and the passage of its

contents, thus causing inflammation and perhaps ulceration and gangrene. The last-named form is the more dangerous, and will cause pain, fever, flatulence, desire to go to stool, though the bowels may be closed by the rupture, hiccough, vomiting (sometimes of the contents of the bowels forced upward), perhaps mortification and death.

Though no one should ever think of trusting wholly or in the main to domestic treatment of rupture, though indeed a surgeon should be summoned as soon as the disorder is discovered, some measures should be adopted until such advice arrives, unless the surgeon is within a call of a few minutes. After some violent exertion one may experience a peculiar sensation in one of those parts most liable to the affection which were mentioned above. An examination will detect the rupture, if one exists, in the form of a protrusion, perhaps very small at first, of a tumor which is *generally* soft and painless on pressure. Now, it is obvious that the intestine falls through the opening by the mere force of gravity. Evidently, therefore, the first thing required is the removal of that pressure; to effect which, lay the patient on his back at once and raise the affected part considerably higher than the upper portion of the body (lifting the head to prevent its engorgement with blood), keeping the leg and knee elevated. Take the point of the protruding tumor in one hand, and with the fingers of the other push the intestine back through the opening; *but do this slowly and very gently*, for even the slightest haste and least rudeness may cause injury and strangulation. Indeed, the urgency of prompt treatment in the beginning is based upon the danger of such strangulation if the rupture is allowed to remain an hour or more in waiting for a surgeon. It requires, as a rule, no great skill to return the intestine, if treated at once; but it does require patience, for an hour's trial may be necessary. If difficulty is experienced in this operation, great assistance may be rendered by injecting a large quantity of tepid water into the bowel, while the body is kept in the position described. This increases the pliability of the intestine, and produces a greater weight that presses up toward the chest. Both before the surgeon arrives, and in subsequent treatment, indeed for some time after one considers himself cured, the patient should, as far as possible, avoid coughing, sneezing, straining at stool, crying, in fact all kinds of straining and violence, for they tend to force the intestine out through the opening. He should also guard against undue trepidation. With good treatment, he will be materially aided and generally, if he be young, will be cured.

When medical aid is secured, follow the directions *implicitly and patiently*. Remember that a cure is conditioned upon a union and new growth in a broken membrane, which is liable to break again if the measures of relief are left off for a time, or their use stopped too soon. It is much safer

to continue the means recommended beyond the time prescribed by the physician than to stop them an hour sooner than he recommends.

Some form of truss will be used, and the greatest pains are requisite in getting one which perfectly fits the affected parts. More than this, it may slip little or much from its place, and must be replaced at once. It must be worn during the whole day, and is to be taken off after the patient lies down at night and put on before he rises in the morning. In general, exercise the greatest care in keeping the bowel from getting out through the opening after it has once been put back; the protrusion of a few minutes may induce strangulation, and will surely undo what good has been done.

CARRYING THE INJURED.

A few directions upon this subject will be of value in times of haste, and it may be said, first of all, that it is better not to practice too much haste, for it tends to make one do just the wrong thing.

If there is but one bearer, he may pass an arm around the patient below the arms, while the latter throws his arm around the bearer's neck. If the patient is unable to assist himself thus, he may, his weight permitting, be taken into the arms as a child, or upon the shoulders.

If there are two bearers, they may clasp two hands under the legs above the knees, with the other two around the "small of the back," while the patient passes his arms around their necks. In place of this, a seat may be made by throwing a coat over a board.

A stretcher may be improvised from boards, shutters, benches, cots, mattresses and the like, properly covered with blankets, pillows, clothing, grass, straw, leaves, or whatever other suitable material is at hand. Hammocks, or strong fabrics of any kind, may be used for the same purpose. A transport may be made of poles, with straps or withes reaching over them.

These temporary devices should not be carried on the shoulders, but in the hands or with straps passing over the shoulders. The bearers should take short steps, avoid swaying of their bodies, and *not* keep step. The sides of the stretcher should be kept on the same level, with the patient's head slightly elevated if the face is pale, much elevated if it is red.

POISONS.

In the present instance, the word "poisons" is limited to such things as have a deadly or noxious effect when taken into the stomach or lungs. Some of them are exceedingly active and bring on death in a few minutes, such as strychnine and prussic acid; while others act slowly, perhaps almost imperceptibly, and reduce the system during the lapse of hours, days, and

even years, as is true in the case of those who have acquired a habit of using opium, alcohol, arsenic, and the like; or those who drink water impregnated with poison, or eat food cooked in poisonous utensils, or whose occupation, as painting and mining, brings them into prolonged contact with the noxious material. Of the poisons mentioned below, sufficiently small doses of any are comparatively harmless, and the remarks will apply to instances in which they have been taken in hurtful amounts, whether the result is to be greater or less injury merely, or death. Hence, the reader will understand that the symptoms mentioned include all cases, and will treat the patient accordingly, without supposing that we claim all injurious doses are followed by *all* the symptoms named, especially the more violent ones.

Poisonous Medicines.—Because arsenic, strychnine, aconite, belladonna and other drugs included in the following lists are treated as poisons, there is a fear of using them as medicines. If they are used in quantity and frequency as directed by a responsible physician, no more danger attends them than other remedies which are taken without question or hesitation. Such *overdoses* as are taken by mistake or for criminal purposes are treated below.

In this connection it is proper to say that some of those who use such caution about drugs often seriously or fatally poison themselves and others by the familiar cordials, paregorics, hive-syrups, and especially the soothing-syrups, to say nothing of laudanum and other stronger preparations. By what means of investigation the figures were reached we know not, but a leading journal of pharmacy has stated that 150,000 infants are killed annually by the opium used in making the different kinds of "soothing-syrups," and we sympathize with the English physician who has said that "any mother, nurse, or baby-farmer using these substances ought to be treated as a criminal." Though there is some palliation of the wrong if the one who administers them is so lacking in information as never to have seen such a warning as the present one, there is no excuse after the caution has been given. It ought to be enough to deter one from their use to learn from an eminent English surgeon that half a teaspoonful of Godfrey's Cordial, or of Paregoric Elixir, has been known to kill an infant. That the infant is *slowly* poisoned to death does not shift the responsibility from the one who gave the poison.

Cautions:—1. Any active poison, or any poisonous medicine in a dangerous form, should be plainly and carefully labeled and, when possible, kept under key, *always* apart from other drugs or medicines.

2. When a poison is about the house, a known antidote for the same should be kept by its side. The reader should now read the different methods below for making emetics, to arm himself for a time of need.

EMETICS AND ANTIDOTES.

Vomiting by the use of an emetic, to expel the poison from the stomach, is one of the two most common steps in the immediate treatment; *antidotes*, to neutralize the poison, is the other. As soon as it is consistent with a prompt use (in urgent cases) of the means mentioned under the different classes given below, summon a physician. Since emetics will be required in so many cases, we append directions for different kinds.

A.

Stir a dessert-spoonful of ground mustard or powdered alum in a gobletful of warm (*not hot*) water, give one-fourth of it (less for a child) followed by a cupful of warm water; repeat this at intervals of one minute until the desired effect is produced. Assist the emetic by tickling the inside of the throat with a feather, or with a finger. *For poisoning by arsenic or tartar emetic*, use cold (*never warm*) water to *start* the vomiting, but warm thereafter. This is the best emetic we can offer.

It is not enough to merely induce vomiting; it should be kept up until the stomach is thoroughly freed from the poison. For this purpose, follow up with frequent drinks of warm water, or, still better, warm water with flour or white of egg in it; warm milk is also excellent.

B.

Drink freely and often of simple warm water (*not hot*), or better still, of warm water with as much salt as it will dissolve, one cupful after another, tickling the throat and keeping up the vomiting, when started, as directed above. Use *cold* drinks at first for arsenic and tartar emetic.

C.

Dissolve in water as much sulphate of zinc (white vitriol) as will lie on a silver quarter-dollar, without heaping much, and drink the whole at once, following with a cupful of warm water, and repeating this three or four times at intervals of three minutes until vomiting occurs. Tickle the throat and continue the vomiting as directed under A. Pulverized ipecacuanha, a similar amount mixed in a cupful of water (it will not dissolve), and given every minute for three or four times, is an excellent emetic, especially for children; it should be assisted and followed up as just directed for sulphate of zinc.

D.

Tickling the throat with the finger or a feather is obviously the simplest method. Though it is always a valuable aid in the other methods

and is sometimes alone sufficient, it is not always reliable, especially when there are no fluids in the stomach.

ARTIFICIAL SWALLOWING AND BREATHING.

If the patient is unconscious, or is unable or unwilling to swallow, put him on his back, pass the thumbs inside the cheeks along the gums, and force them between the jaws back of the teeth, where biting them is impossible. Put the handle of a spoon or other smooth instrument well back on the tongue, press it down, and pour the emetic in the throat. There is no danger of strangling the patient if he does not catch his breath, cough, or talk.

If there is apparent death after the poison has been removed from the stomach, resort to the directions for Artificial Breathing, Circulation, Warmth and Strength, given under "Drowning."

INDEX OF POISONS.

The poisons mentioned in the following pages are grouped into classes with reference to brevity and convenience of treatment. The reader will refer to the alphabetical index here subjoined for the *class* (not the page) under which he will find the desired directions for treatment. The Roman numeral opposite a given poison in the list corresponds to the class in which that poison is treated on some subsequent page.

NAME.	CLASS.	NAME.	CLASS.
Acid, Acetic.....	XIX	Aqua Fortis.....	XIX
— Arsenic.....	II	Aqua Regia.....	XIX
— Carbolic.....	XVIII	Arsenic.....	II
— Citric.....	XIX	Arsenite of Copper.....	V
— Hydrochloric.....	XIX	Baryta.....	XVI
— Hydrocyanic.....	XVII	Belladonna.....	XXV
— Muriatic.....	XIX	Bichromate of Potash.....	XIV
— Nitric.....	XIX	Bismuth.....	VII
— Nitro-muriatic.....	XIX	— Nitrate of.....	VII
— Oxalic.....	XIX	— Oxide of.....	VII
— Prussic.....	XVII	Bitter Almonds, Oil of.....	XVII
— Sulphuric.....	XIX	Bitter-Sweet.....	XXV
— Tartaric.....	XIX	Bloodroot.....	XXV
Aconite.....	XXV	Blue Verditer.....	V
Alcohol.....	XXII	Blue Vitriol.....	V
Aloes.....	XXVI	Brandy.....	XXII
Alum.....	XII	Brass Vessels.....	V
Ammonia.....	XI	Bromine.....	XXIII
— Liquor of.....	XI	Bryonia.....	XXVI
— Muriate of.....	XI	Buckeye.....	XXV
Anemone (Meadow).....	XXVI	Burnett's Fluid.....	IX
Antimony.....	VIII	Calomel.....	IV
— Butter of.....	VIII	Camphor.....	XII
— Chloride of.....	VIII		
— Oxide of.....	VIII		

NAME.	CLASS.	NAME.	CLASS.
Cantharis	XXIV	Hemlock.....	XXV
Carbolic Acid.....	XXVIII	Henbane.....	XXV
Castor-Oil Beans.....	XXVI	Hyoscyamus	XXV
Caustic Potash.....	XI	Hyssop.....	XXVI
Cherry Laurel Water.....	XVII		
Chloral.....	XXI	Indian Tobacco.....	XXV
Chlorine.....	XXIII	Indigo.....	XXV
Clams.....	XXVIII	Iodide of Potash.....	XIII
Colchicum.....	XXV	Iodine.....	XIII
Colocynth.....	XXVI	Ipecacuanha.....	XXV
Concentrated Lye.....	XI	Iron, Chloride of.....	VI
Conium.....	XXV	—— Sulphate of.....	VI
Copper.....	V	—— Tincture of.....	VI
—— Arsenite of.....	II	Ivy, Poison.....	XXV
—— Carbonate of.....	V		
—— Sulphate of.....	V	Jimson Weed	XXV
—— Vessels.....	V	Juniper, Oil of.....	XXVI
Copperas.....	VI		
Cordials for Children.....	XX	Laudanum.....	XX
Corrosive Sublimate.....	IV	Lead, Acetate of.....	III
Cotton Root.....	XXV	—— Red.....	III
Crabs	XXVIII	—— Sugar of.....	III
Crawfish.....	XXVIII	—— White.....	III
Cream of Tartar.....	XI	Leaden Pipes, etc.....	III
Creosote	XVIII	Lime.....	XVI
Croton Oil.....	XXVI	Liquor Ammonia.....	XI
Cubebs.....	XXVI	Lobelia	XXV
Cyanide of Potash.....	XVII	Locust.....	XXV
		Lunar Caustic.....	IX
Digitalis.....	XXV		
Disinfecting Fluids.....	IX	Matches.....	XV
Dog-Button.....	I	Meats, Poisonous.....	XXVIII
Drains, Gases from.....	XXIII	Mercury.....	IV
Dulcamara	XXV	Mines, Gases from.....	XXIII
Dyes, Hair and Whisker.....	X	Monkshood.....	XXV
		Morphine.....	XX
Elder.....	XXVI	Mountain Ash.....	XXV
Ergot.....	XXV	Mushrooms.....	XXVII
Exterminators.....	XV	Mussels.....	XXVIII
Fly Paper and Powder.....	II	Nightshade.....	XXV
Fool's Parsley.....	XXV	Nitre.....	XII
Fowler's Solution.....	II	Nux Vomica.....	I
Foxglove.....	XXV		
		Oak, Poison.....	XXV
Gas, Bromine.....	XXIII	Oil of Vitriol	XIX
—— Carbonic.....	XXIII	Oleander.....	XXVI
—— Carbonic Oxide.....	XXIII	Opium.....	XX
—— Charcoal.....	XXIII	Orpiment.....	II
—— Chlorine.....	XXIII	Oysters.....	XXVIII
—— Common Coal.....	XXIII		
—— Hydrochloric.....	XXIII	Paris Green.....	II
—— Laughing.....	XXIII	Parsnips.....	XXVI
—— Nitrous.....	XXIII	Peach Pits.....	XXV
—— Sulphurous.....	XXIII	Pearlash.....	XI
Gelsemium.....	XXV	Pearl Powder.....	VII
Gin.....	XXII	Pennyroyal.....	XXV
Green Vitriol.....	VI	Phosphorus.....	XV
		Pickles.....	V
Hartshorn.....	XI	Pink Root.....	XXV
Hellebore.....	XXV	Pits, Gases from.....	XXIII

NAME.	CLASS.	NAME.	CLASS.
Poke.....	XXVI	Spanish Fly.....	XXIV
Poppy.....	XXV	Spigelia.....	XXV
Potash, Bichromate.....	XIV	Stramonium.....	XXV
—— Caustic.....	XI	Strychnine.....	I
—— Cyanide of.....	XXVII	Sumac.....	XXVI
—— Iodide of.....	XIII		
—— Nitrate of.....	XII	Tansy, Oil of.....	XXVI
Potato Balls and Sprouts.....	XXV	Tartar Emetic.....	VIII
Potato Bug or Fly.....	XXIV	Thorn Apple.....	XXV
Prussic Acid.....	XXVII	Toadstools.....	XXVII
Pulsatilla.....	XXVI	Tobacco.....	XXV
		Toilet Powders.....	VII
Quick-Silver.....	IV	Verdigris.....	V
		Vermilion.....	IV
Ratsbane.....	II		
Realgar.....	II	Wall-Paper.....	II
Red Precipitate.....	IV	Wells, Gases from.....	XXIII
Rum.....	XXII	Whiskey.....	XXII
		White Precipitate.....	IV
Saffron.....	XXV	White Vitriol.....	IX
Sal Ammoniac.....	XI	Wild Cherries.....	XXVI
Saltpetre.....	XII	Wines.....	XXII
Sanguinaria.....	XXV	Wines (Poisoned).....	III
Savine, Oil of.....	XXVI	Wolfsbane.....	XXV
Scheele's Green.....	V		
Sea Onion.....	XXV	Yellow Jessamine.....	XXV
Silver, Nitrate of.....	X	Yew.....	XXV
Skunk's Cabbage.....	XXV		
Soda (Baking).....	XI	Zinc, Chloride of.....	IX
Soothing Syrups.....	XX	—— Sulphate of.....	IX
Sorrel, Salt of.....	XIX		

I.—STRYCHNINE.—NUX VOMICA.—DOG-BUTTON.

SYMPTOMS.—This is one of the most rapidly fatal poisons known. In a very short time after it has been swallowed, distress comes on, followed by convulsions; screams; locking of the jaws; livid face; head and heels turned back; muscles of the abdomen rigid; death. The mental faculties are retained to the last.

TREATMENT.—Give an emetic at once until the stomach is thoroughly cleansed. Pour cold water on the head and make alternate hot and cold applications on the spine. Put over the heart cloths wet in hot water and apply friction to the surface. If breathing is feeble or has ceased, use Artificial Breathing, Circulation, Warmth and Strength (see "Drowning"). Before the jaws close in convulsions, put a cork or stick between the teeth, so that remedies may be artificially administered if necessary. Poisoning by strychnine is similar to suffocation, and the artificial means for restoring respiration may be efficacious some time after breathing has stopped. If convulsions have commenced before treatment has been begun, let the patient cautiously inhale chloroform. Large doses of veratrum viride are also very highly recommended for internal treatment.

II.—ARSENIC.

White Arsenic, Arsenic Acid, Arsenical Wall-Paper, Fly Paper and Powder, Fowler's Solution, Paris Green, Ratsbane, Realgar.

SYMPTOMS.—Great pain and tenderness about the stomach and bowels, retching, vomiting of greenish or yellowish matter, perhaps blood-stained; thirst; hoarseness and disturbed speech; throat feels dry and tight; diarrhœa, with frequent desire to go to stool; urine perhaps suppressed, and burning pain in urinary organs; clammy sweats; countenance pale and sunken, or painfully anxious; eyes red and bright; extremities bluish; cramps; convulsions; death in severe cases.

TREATMENT.—Give emetics, method A being preferable. When the stomach is perfectly cleared, give a dose of castor-oil, or linseed-tea, and magnesia, to cleanse the bowels. Put poultices and cloths wet in hot water on the abdomen to relieve the inflammation that follows.

Remarks.—White arsenic is not only taken for purposes of murder and suicide, but is easily mistaken for Epsom salts, magnesia, or for the plaster of Paris used in confectionery. Too great caution cannot be exercised about Paris green and the fly-poisons. Wall-paper and some fabrics for clothing contain enough arsenic to create serious disorders. From living or sleeping in a room whose walls are covered with poisonous paper, one will sometimes have sore, smarting eyes; red, swollen, itching nose; loss of smell; “stuffed up” breathing; sore, ulcerated mouth, with loss of taste; dry, white tongue; sore, dry throat; indigestion; thirst; retching; vomiting; diarrhœa; irritation and eruptions on the skin; rheumatic feelings; low spirits; neuralgia; irritability of temper; scanty urine; prostration and emaciation; symptoms worse at night. After removing the exciting cause, use baths, especially the Turkish, to throw off the poison that is in the system. Paper suspected of containing poison should be analyzed by a chemist.

III.—LEAD.

Acetate of Lead, White and Red Lead, Sugar of Lead, Water in Lead Pipes and Vessels, Food and Drinks prepared or kept in Lead-Glazed Vessels, Wines sweetened with Lead.

SYMPTOMS.—Pain in the stomach and bowels; spasms of muscles; nervous disorders; paralysis more or less extended; dizziness; debility; torpor; convulsions; death in extreme cases. If lead is taken into the system slowly and during a long period, there will be persistent colic; cramps; periods of ease; scanty urine; constipation; increased saliva; discolored teeth; anxious, depressed look.

TREATMENT.—At first, give whites of eggs, clear or stirred in water, and follow with drinks of milk; then use emetics until the stomach is cleansed. If whites of eggs are not at hand, use the emetics at once, and the eggs as soon as they can be brought. A fair substitute for the eggs is a thin paste of flour and water. To relieve any inflammation that may remain, put on the stomach and bowels cloths wet in hot water. To rid the system, give iodide of potassium or epsom salts in repeated doses. For lead-colic, give opium, belladonna, alum, acidum sulphuris, either one at a time or in alternation.

Remarks.—Be careful about using leaden pipes and vessels for food and drinks. If water is *soft*, such pipes should not be used to convey it from any supply. Painters, glaziers, miners, and others who are continually exposed to this poison should frequently wash with soap and water, especially the hands, face and nails, avoid eating in apartments impregnated with lead, use drinks containing dilute acid, such as lemon-juice, and exclude lead from the lungs as much as possible by keeping the mouth closed or covered with a respirator or a cloth wet in dilute vinegar.

IV.—MERCURY.

Quick-Silver, Corrosive Sublimate, Red Precipitate, White Precipitate, Calomel, Vermilion.

SYMPTOMS.—Strong, nauseous metallic taste when swallowing; heat and pain in the stomach; vomiting, perhaps of bloody matter; heat and tightness in the throat; occasionally loss of speech; face sometimes pale, flushed at other times; stupor; convulsions; death. Salivation often ensues in cases of recovery.

TREATMENT.—To cleanse the stomach and relieve any inflammation that follows, proceed as for Lead above. For salivation after recovery, give two drops of dilute nitric acid internally two or three times a day, and use a gargle of the same. Give *nux vomica* if there are mercurial tremor and paralysis. If the bowels are much disturbed, give arsenicum. Keep the patient warm and give all the bread and milk, soup and broths he can take.

V.—COPPER.

Blue Vitriol or Sulphate of Copper, Verdigris, Food cooked in Copper or Brass Vessels not well cleansed, Pickles made green with Copper, Scheele's Green, Arsenite of Copper, Blue Verditer, Carbonate of Copper.

SYMPTOMS.—These are much like those of Arsenic and Mercury, along with violent headache; blue or green vomit; belching with taste of copper;

cramps in the legs. Jaundice frequently comes on in this form of poisoning, but seldom in others. When death occurs, which is seldom, it is preceded by convulsions, paralysis and insensibility.

TREATMENT.—The stomach should be cleansed and any resulting inflammation be relieved by the means given for Lead under III.

VI.—IRON.

Copperas, Green Vitriol, Sulphate, Tincture and Chloride of Iron.

SYMPTOMS.—Pains in the stomach and bowels; persistent vomiting and purging; intense pain in the throat; “drawing” sensation in the stomach; weak pulse; cold skin.

TREATMENT.—Same as for Lead, under III, so far as it relates to clearing the stomach and relieving inflammation.

VII.—BISMUTH.

Pearl Powder, Nitrate of Bismuth, Oxide of Bismuth, Toilet Powder.

SYMPTOMS.—Internal inflammation; decreased or suppressed urine; unpleasant metallic taste; hiccough; vomiting; cramps; delirium; death in extreme cases.

TREATMENT.—Cleanse the stomach and treat inflammation as in III.

VIII.—ANTIMONY.

Tartar Emetic, Butter or Chloride of Antimony, Oxide of Antimony.

SYMPTOMS.—Vomiting; or if this most common effect is not produced, pain and burning in the stomach; loose bowels; tightness in the throat; cramps.

TREATMENT.—Give emetics until the stomach is thoroughly cleansed, then follow with strong tea. Magnesia in milk is good before and after the stomach has been cleared, as are also infusions of oak or Peruvian bark.

IX.—ZINC.

White Vitriol or Sulphate of Zinc, Chloride of Zinc, Disinfecting Fluids, such as Burnett's.

SYMPTOMS.—Burning and pain in the stomach; vomiting of black fluid; pale face; cold extremities; rapid, unsteady pulse; feeble voice; sluggish bowels, with black discharges; spongy gums; palate covered with a white or yellowish film.

TREATMENT.—Give mixtures of eggs and milk, beaten together, as long as they are vomited in a curdled state. Soap-suds (using clear white

soap, if obtainable) are also efficacious, as well as milk and the carbonates of soda and potash. Whatever is used should be administered promptly. Relieve inflammation as directed for Lead under III.

X.—SILVER.

Nitrate of Silver (Lunar Caustic), Hair and Whisker Dyes.

SYMPTOMS.—In the main, like those of Arsenic. See II.

TREATMENT.—Eat common salt freely, or swallow as strong a solution of it as can be made. Treat any resulting inflammation as for Lead.

XI.—AMMONIA AND POTASH.

Liquor Ammoniae or "Hartshorn", Sal Ammoniac or Muriate of Ammonia, Caustic Potash, or Concentrated Lye, Pearlash, Baking-Soda, Cream of Tartar.

SYMPTOMS.—Violent burning; biting taste; hot, raw throat; vomiting of bloody matter, with sharp pain in the stomach; cold sweats; weakness; severe colic; bloody action of the bowels; death in violent cases.

TREATMENT.—Into a half-glassful of water put almost as much vinegar or juice of lemons, and administer at once; then follow with olive oil, four or five dessert-spoonfuls in the worst cases, and copious drinks of milk. Do not resort to emetics. If ammonia vapor has been inhaled in excessive quantities, inhale steam several hours through a tube, or from a tea-pot.

XII.—SALTPETRE.—NITRE.—NITRATE OF POTASH.

SYMPTOMS.—Burning pain in the stomach; vomiting; increased flow of urine, perhaps with inflammation of the kidneys; great depression; death in somewhat rare cases.

TREATMENT.—Use emetics until the stomach is thoroughly cleansed, and follow with drinks of milk, or rice-water or barley-water. The same treatment is advisable for over-doses of camphor and alum.

XIII.—IODINE AND IODIDE OF POTASH.

SYMPTOMS.—Substantially as in Arsenic, under II above, though there is inability to vomit.

TREATMENT.—*For Iodine*, give starch or wheat-flour beaten up in water, and follow with emetics until the stomach is well cleansed. *For Iodide of Potash*, use the emetics at once, without giving the starch or flour. Inflammation in either case should be relieved by applying to the stomach and bowels cloths wet in hot water.

XIV.—BICHROMATE OF POTASH.

SYMPTOMS.—Mainly the same as for Arsenic, under II, with foul, persistent sores on the hands of dyers and others who use it.

TREATMENT.—Give emetics; then eat magnesia or pieces of chalk. Relieve any resulting inflammation by applying over the painful parts cloths wet in hot water. Use this poison with extreme caution.

XV.—PHOSPHORUS.

Matches, "Exterminators," etc.

SYMPTOMS.—Pain and tenderness in the stomach and bowels; vomiting, the discharge being luminous in the dark; great thirst; diarrhœa; pain in the whole body; other symptoms of poisoning by Arsenic (II above).

TREATMENT.—Give emetics; follow with magnesia mixed in linseed-tea or *skimmed* milk. *Do not give oil of any kind.* Relieve inflammation as directed under XIV. Keep matches out of reach of children; also various kinds of "exterminators" for rats and vermin.

XVI.—LIME AND BARYTA.

SYMPTOMS.—Violent burning pain in the stomach; vomiting; diarrhœa, with gripes; weakness; headache; convulsions; death in some cases.

TREATMENT.—*For Lime*, give a teaspoonful of baking-soda or of magnesia, or chalk, or shavings of soap, in a cup of milk or water. Then give whites of eggs and an abundance of milk. Dilute vinegar or lemon-juice is also an excellent means of treatment, since it neutralizes the lime. *For Baryta and its preparations*, give magnesia or chalk in a cup of milk or water to counteract the effects, following with whites of eggs and milk. Relieve inflammation as directed under XIV for Bichromate of Potash.

XVII.—PRUSSIC OR HYDROCYANIC ACID.

Oil of Bitter Almonds, Cherry Laurel Water, Cyanide of Potash.

SYMPTOMS.—Almost immediate insensibility, with or without convulsions; nausea; belching, with acid taste; quick pulse; pain in head; suffocation; death. They are very rapidly fatal.

TREATMENT.—*Immediately* dash the coldest water procurable on the face, chest and head, pouring the same on the head and neck from some height; inhaling ammonia cautiously at the same time, with intermissions. Give a little soda or chloride of lime, in water. *Always* keep up artificial breathing to restore or sustain respiration. (See "Drowning.") Relieve inflammation as directed for Bichromate of Potash under XIV.

XVIII.—CARBOLIC ACID AND CREOSOTE.

SYMPTOMS.—Pain in the bowels; lining of the mouth white, hard and “drawn”; vomiting of frothy mucus; clammy skin; heavy or loud breathing; insensibility; smell of acid; death in the worst cases.

TREATMENT.—Give a teaspoonful of soda in a cup of milk or water. A like amount of soft soap, or of hard soap shaved off in thin flakes, may be given if the soda is not at hand; magnesia or chalk are also substitutes. Afterward, give whites of eggs and copious drinks of milk. Relieve inflammation as directed for Bichromate of Potash under XIV above.

Remark.—Few of the violent poisons are so much used and so carelessly kept about the house, accessible to children and others, as carbolic acid. It does not seem to be generally known how poisonous it is.

XIX.—ACETIC AND OTHER ACIDS.

Acetic, Citric, Hydrochloric, Muriatic, Nitric, Nitro-muriatic, Oxalic, Sulphuric and Tartaric Acids, Aqua Fortis, Aqua Regia, Oil of Vitriol, Salt of Sorrel.

SYMPTOMS.—Sour, biting taste; burning and soreness in the throat, perhaps with sudden ejection of the acid; lining of the mouth “ridgy”; if reaching the stomach, acute pain there with belching; scaling of the skin where touched by the acid; vomiting of bloody mucus; extremities clammy; convulsions; death.

Aqua Fortis, or Nitric Acid, leaves *yellowish* stains on the parts of the skin or clothing which it touches. *Sulphuric Acid*, or Oil of Vitriol, leaves *brownish* stains and blackened teeth. *Hydrochloric* or *Muriatic Acid* leaves *deep red* stains.

TREATMENT.—Give magnesia, chalk, slaked lime, powdered plaster scraped from the walls, or common wall-whiting, mixing them to a *paste* in water, milk, oil, or whites of eggs. Follow with gum-Arabic water, slippery-elm water, or starch and water. *For Sulphuric Acid*, use *very little water*, as it increases the activity of the acid. Treat the resulting inflammation as directed for Bichromate of Potash under XIV.

Remark.—The carelessness with which some of these acids are kept about the house, and even in reach of children, cannot be too strongly condemned. Oxalic Acid is sometimes taken by mistake for epsom salts and sulphate of zinc, because of its resemblance to them. The acid, however, as learned by touching it with the point of the tongue, is seen to be sour, while sulphate of zinc, or white vitriol, has a “drawing” effect, and epsom salts are bitter. The acid is much used in bleaching and removing stains.

'XX.—OPIUM.

Opium, Morphine, Laudanum, Soothing Syrups, Cordials for Children.

SYMPTOMS.—Drowsiness or apparently deep sleep; pale, sunken, or bloated face: closed eyes and contracted pupils; small pulse; deep, quiet breathing; free perspiration; breathing becomes slower, and later is like a snore; feeling grows blunted; if recovery ensues, it is preceded by a deep sleep of a day or two, followed by sickness, vomiting and dizziness.

TREATMENT.—Keep the patient in fresh air, and aroused by dashing on the face and head water alternately hot and cold; make him constantly walk about, to prevent sleep, an assistant being on either side if necessary. Meanwhile use emetics, by artificial swallowing if it can not be otherwise done. When all poison is out of the stomach, *not before*, give cream of tartar and water, or diluted vinegar or lemon-juice, every ten or fifteen minutes. Do not allow the patient to sleep for a considerable time after this. When he does sleep, arouse him at once if he begins to snore. In extreme cases, if respiration is feeble or has ceased, apply and persist in artificial breathing (see “Drowning”).

Remark.—We invite special attention to our remark, under “Poisonous Medicines,” page 357, upon opium in popular medicines for children.

XXI.—CHLORAL.

SYMPTOMS.—Faintness; gasping; pulse increasing in rapidity, even to a fluttering of the heart; jerking of the limbs; sinking; oppression in the stomach; confused mind; suffocation; great thirst; failure of muscular strength; hanging head; death.

TREATMENT.—Keep the patient aroused as just directed for Opium. Give fresh air in abundance; administer whites of eggs, or flour-and-water, with brandy or other stimulants in moderation. Keep the chest and limbs warm by friction. In severe cases, apply artificial breathing (see “Drowning”), but keep the head meanwhile *lower than the feet*.

XXII.—ALCOHOL.

Whiskey, Brandy, Wines, Gin, Rum.

SYMPTOMS.—Intoxication; red, swollen face; disturbed breathing; apoplexy or paralysis; delirium tremens, and sometimes death; the smell of the liquor on the breath is a means of distinguishing the condition from spontaneous apoplexy.

TREATMENT.—In severe cases, induce vomiting by emetics; cautiously inhale ammonia and, after the vomiting, drink strong coffee.

XXIII.—GASES.

Carbonic Acid Gas, Carbonic Oxide, Charcoal Gas, Common Coal Gas, Bromine, Chlorine, Nitrous Gas, Sulphurous Gas, Hydrochloric Gas, Laughing Gas, Gases in Drains, Privies, Wells, Mines and Pits.

SYMPTOMS.—Tightness and heaviness in the head; ringing in the ears; pungent feeling in the nose, throat or lungs, or all of them; drowsiness; difficult or suppressed breathing; unconsciousness; violent heart-action; real or apparent death from suffocation.

TREATMENT.—Get the patient at once into the open air, put him on his back, loose the clothing, pour cold water on the head, neck and shoulders, and resort to artificial breathing, circulation and warmth (see “Drowning”); allow the sufferer to inhale ammonia (sparingly), camphor or cologne water, and take copiously of cold acid drinks, but moderately of stimulants.

Remark.—The reader should carefully note our remarks and caution under “Suffocation by Gases” in an earlier part of this chapter.

XXIV.—CANTHARIS.

Spanish Fly, Potato Bug or Fly.

SYMPTOMS.—Biting taste; sickening odor in the breath; burning in throat, stomach and bowels; generally much vomiting, perhaps of bloody substances; bloody discharge from the bowels; intense pain in the stomach; suppression or retention of urine, with heat in the bladder and genitals; blistering and peeling off of the mucous membrane of the mouth and throat; in severe cases, terrible convulsions, delirium and death.

TREATMENT.—If vomiting does not commence, use emetics until the stomach is well cleansed, then follow with a dose of Glauber’s or Epsom salts (*not oil*), with internal doses of camphor to correct urinary difficulties that may remain. Relieve any inflammation that is left by applying cloths wet in hot water over the parts where pain is felt, especially the stomach and bowels. See Retention and Suppression of Urine.

XXV.—ACONITE, BELLADONNA, AND OTHER VEGETATION.

Aconite, Belladonna, Bitter-Sweet, Blood Root, Buckeye, Colchicum, Conium, Cotton Root, Digitalis, Dulcamara, Ergot, Fool’s Parsley, Foxglove, Gelseminum, Hellebore, Hemlock, Henbane, Hyoscyamus, Indian Tobacco, Indigo, Ipecacuanha, Jimson Weed, Lobelia, Locust, Monkshood, Mountain Ash, Nightshade, Peach Pits, Pennyroyal, Pink Root, Poison Oak, Poison Vine, Poppy, Potato Balls and Sprouts,

Saffron, Sanguinaria, Sea Onion, Skunk's Cabbage, Spigelia, Stramonium, Thorn Apple, Tobacco, Wolfsbane, Yellow Jessamine, Yew.

SYMPTOMS.—The symptoms will necessarily vary much in these poisons, and we give only the more common ones, grouping them thus because the treatment is substantially the same. They are, stupor; heaviness in the head; numbness; desire to vomit, increasing in degree; pupil of the eye enlarged; spasms in parts of the body; pulse, at first full and strong, becomes variable; breathing quick; countenance anxious and dejected; in extreme cases, delirium and death.

TREATMENT.—*For Tobacco, Yew, Yellow Jessamine, Ergot, Cotton Root, Lobelia (Indian Tobacco), Potato Balls and Sprouts,* use emetics until the stomach is thoroughly cleansed; then put on the head and spine water alternately hot and cold, and give copious drinks of hot teas of some kind.

For Aconite, Belladonna, and others not included in the treatment just named, give five or six teaspoonfuls of powdered charcoal (if it is not at hand, quench and pulverize a live coal from a wood fire, or powder a bone, burnt until it will crumble), repeating the dose if vomiting occurs. Let the patient cautiously inhale ammonia, and drink strong coffee or tea. Apply cloths to the spine wet in water alternately hot and cold, and use friction on the surface. Keep the patient in motion, and resort to artificial breathing (see “Drowning”) when the respiration is very feeble or has ceased. Treat any resulting inflammation as for Cantharis under XXIV.

XXVI.—BRYONIA, PULSATILLA, AND OTHER VEGETATION.

Aloes, Bryonia, Castor-Oil Beans, Colocynth, Croton Oil, Cubebs, Elder Hyssop, Juniper Oil, Meadow Anemone, Oleander, Parsnips (poison), Poke, Pulsatilla, Savine Oil, Sumac, Tansy Oil, Wild Cherries.

SYMPTOMS.—Biting, pungent taste, more or less bitter; dry mouth and throat; violent and long-continued vomiting in many cases; loose bowels, with much pain at stool; pulse rapid, regular and strong; breathing short and hard; pupils enlarged; apparent intoxication; in the worst cases the pulse grows feebler until death ensues. If applied externally, especially if brought into contact with a break in the skin, they cause inflammation, sometimes with eruptions.

TREATMENT.—If vomiting has begun, keep it up; if not, use emetics until the stomach is cleansed; then give strong coffee or dilute vinegar. Apply friction and cloths wet in hot water to the extremities, chest and sides if they are cold, or if the vital powers are reduced. Treat any remaining inflammation as directed for Cantharis under XXIV. If respiration

has become feeble, or has ceased, resort to artificial breathing as directed for "Drowning."

For Croton Oil, induce vomiting with warm water, and follow with milk and whites of eggs. Use this oil with extreme care.

XXVII.—MUSHROOMS.—TOADSTOOLS.

SYMPTOMS.—Sickness; heat and pain in the stomach and bowels; vomiting; loose bowels; thirst; fainting; weak, rapid pulse; cold sweats; in severe cases, convulsions, delirium, death.

TREATMENT.—Give emetics until the stomach is cleansed, and follow with a dose of castor oil, or of Glauber's or Epsom salts, to cleanse the bowels.

Remark.—Poisonous mushrooms, unlike the edible ones, grow in wet shady places, have a sickening odor and a dirty-looking exterior, are of various colors, sometimes very gaudy, and are softer and more porous than the others. Be cautious in gathering them for food.

XXVIII.—POISONOUS MEATS.

Crawfish, Land Crabs, Mussels, Oysters and Clams out of season, spoiled or diseased, Diseased Meats of all kinds.

SYMPTOMS.—Sense of weight in the stomach; headache and dizziness heat about the head and eyes; thirst; perhaps eruptions on the skin; some times death.

TREATMENT.—Same as for Mushrooms, under XXVII.





52. MAIDENHOOD.

CHAPTER XII.

THE MAID AND THE WIFE.

SEX.

UNDER the same circumstances the childhood of one sex, if left to nature unrestrained, does not greatly differ from that of the other. It is a matter of frequent remark that the little boy and little girl engage with like zest in the same sports, and that, though a difference is always perceptible, the habits of the two are strikingly alike. After a time, however, a radical change begins in both, causing a divergence in tastes, bodily form, features, manners and pursuits. The separation grows wider and wider each year until all those characteristics have been developed which distinguish the man from the woman. The playful, thoughtless and innocent familiarity of childhood's days gradually gives place to the reserve which nature and propriety impose, and which perhaps makes the two upon reaching maturity little less than strangers to each other. This transformation is the outgrowth of an inherent difference which does not assert itself in the early years. The nature and importance of the transition should be understood by all, but the present subject does not lead us to speak of it as it manifests itself in the male sex.

OVULATION AND MENSTRUATION.

In woman, the basis of the change noticed above is found in the development and functions of two small, firm organs, called the ovaries, in size and shape resembling large almonds, which are located above and at the sides of the womb. Each is connected with the womb by a tube about four inches in length, known as the Fallopian tube. Within the ovaries are a great many diminutive vesicles which at their maturity contain eggs, or ova, one of which is necessary to the production of a new being.

Every four weeks, with few exceptions, a vesicle bursts from its ovary and liberates the egg, thus effecting the function of *ovulation*. The egg thus set free traverses the Fallopian tube into the womb, and is thence expelled and lost. This process is attended with an exudation of ordinary

venous blood through the mucous lining of the womb, known as *menstruation*, the monthly flow, or the menses.

The Mother's Advice.—In the United States the average age at which menstruation begins is fourteen and a half years. In some it appears earlier or later, according to the general physical development. Girls who are stimulated by the influences of society, particularly in the cities, generally experience it earlier than those who live in the more quiet country. Warm climates and rapid growth also favor early menstruation. With some the period is delayed until the sixteenth or eighteenth year. Whatever the age, it marks the era of fertility, or puberty, and its approach should be a signal to every mother to teach her daughter to expect the change peculiar to her sex, so that she may be prepared to protect herself from unnecessary exposure to cold and fatigue, and thus insure her future good health.

“Some girls, in their ignorance and false notions, look with disgust upon this function and designedly or carelessly use cold baths or other means for suppression, and they have a life-long invalidism as a consequence.” The recurrence of the menses at regular periods is one of the most important functions of the female organism, and it should not only never be interfered with but should always be most jealously guarded. However much good advice may be given in books of this kind to girls and young women, nothing can take the place of the mother's kind instruction and advice in warding off the excitement incident to the first appearance of this function and in correcting subsequent imprudence. Details upon this matter are omitted here so that mothers may be left with the full responsibility of a duty which some are too prone to neglect. Besides, a sense of modesty makes the maiden shrink from having detailed directions upon her peculiar anatomy open to the eyes of all readers of a work of this nature, and a respect for that feeling has led the writer to pass over such details. Yet she would not thus ignore the urgency of her obtaining the needed knowledge of herself, but would insist that she secure a suitable book, upon the advice of a physician or other qualified counsel, that will treat the subject adequately and temperately.

Duration of the Menses.—The duration of the monthly period varies in different individuals. Though it is generally about four days, in some it is six or eight. While the interval between the periods averages about twenty-eight days, it may vary moderately in the same individual without causing any material disturbance. In exceptional cases, menstruation takes place every three weeks; in still other cases perhaps but once in six weeks; yet the girl or woman may enjoy good health.

Cessation of the Menses.—Menstrual life, or the period of fertility, continues about thirty years. Its cessation, or, as it is commonly known, the

"change of life," is spoken of more particularly among the disorders considered below. It is a critical time in a woman's life.

DELAYED MENSTRUATION.

Though the period of the first menstruation may in some cases be delayed much beyond the average age, as noted above, often without inducing poor health or inconvenience, such delay becomes a subject for anxiety if it continues after all the external signs of womanhood have appeared. In the latter condition, there will be excessive languor, drowsiness, periodic sickness, irritability or frequent change of temper, pain in the head and along the spine, palpitation of the heart and shortness of the breath upon the slightest exertion, pain in the lower part of the bowels and between the thighs—all showing that nature is unsuccessfully trying to establish the menstrual function and is in need of some rational assistance. The cause of this derangement in the majority of cases is probably an original delicacy of constitution, or some long-standing chronic affection. Oftentimes it will be found that the disturbances supposed to be due to delayed menstruation really arise from deficient or innutritious food, or from sedentary habits. Tardy menstruation also occurs in girls who are predisposed to any form of consumption. Sometimes it is attended with an exudation of blood through the mucous surfaces of the respiratory passages, and the spitting or vomiting of blood naturally causes alarm.

TREATMENT.—In the treatment it is best to first ascertain whether there be any structural cause, any lack of development, or any deformity of the organs of generation. If the physician, upon an examination, finds no mechanical obstruction, remedies may be given as here directed.

Iron in some form is a leading remedy when absence of menstruation is associated with debility, languor, palpitation, indigestion, and sickly complexion. Phosphorus is useful for persons of delicate constitutions and sensitive lungs, and for those in whom expectoration of blood in small quantities takes the place of the menstrual discharge, with cough and pains in the chest. Give iodine or iodide of potassa to scrofulous patients with enlarged glands and a lymphatic constitution. *Calcarea carbonica* is suited to constitutions similar to those needing iodine, but with chronic indigestion, heartburn and hysteria. *Calcarea phosphorica* is an excellent remedy when the patient has a confirmed cough, with hectic hoarseness, emaciation and debility. Scrofulous patients troubled with leucorrhœa and itching of the genital organs are benefited by sulphur. *Pulsatilla* is indicated by delayed, suppressed, or irregular menstruation; pains in the abdomen and loins; hysterical symptoms; nausea; vomiting; palpitation of

the heart; loss of appetite; deranged digestion; pale face; lassitude; chilliness; headache. If the patient has light complexion, fair hair, and a timid, easily vexed, yet uncomplaining disposition, this medicine is the more clearly indicated. *Nux vomica* may be preferable to *pulsatilla* when the patient is of a vehement disposition or dark complexion, and when there is much disturbance of the digestive organs, with constipation.

Delayed menstruation is often the consequence of exposure to cold or of defective circulation on the surface, which warm clothing would obviate. Regular exercise in the open air, good wholesome diet, avoiding all stimulating drinks, and cheerful, happy surroundings will contribute to the establishing of this function which is most important in the health and happiness of every young woman. Cases of such delay should never be neglected.

EXCESSIVE MENSTRUATION.—MENORRHÆGIA.

Those who are robust and plethoric can bear a much greater discharge without injury than those of delicate, relaxed constitutions. Hence, no definite rule as to quantity can be given. The monthly loss however should never be such as to cause debility and general ill health. Regular excessive monthly discharge, profuseness being the only fault complained of, points to some grave constitutional disorder. The causes may be local or general, as chronic or acute inflammation; polypi; tumors; malignant disease of the womb; some acute or chronic general disease, as tubercular deposits or disease of the kidneys; prolonged mental trouble; too confining or unhealthy occupation; luxurious living. It is not unusual for a case of difficult menstruation to become one of profuse menstruation.

TREATMENT.—If an impoverished state of the blood is the cause of the excessive flow, this condition must be corrected by good diet, pure air, and residence in a healthy climate. Severe and persistent cases are most benefited by a temporary residence on the sea-coast. The daily use of the hip-bath, taken under favorable conditions and followed by friction for several minutes, will relieve the defective activity of the skin which so often co-exists with this disorder.

Give ergot in five-drop doses every four hours if the discharges are fetid, dark-colored, with frequent labor-like pains; feeble constitution. *Ipecac* is efficacious for nausea; bright-red flooding; and when the period occurs every two or three weeks, attended with pressure in the region of the womb.

The state of the system which induces menorrhagia is such that it usually needs china, or some other preparation of Peruvian bark, and this remedy can generally be used alone or in connection with others; it is

indicated by excessive weakness from the great loss of blood, with a tendency to perspiration, swelling of the lower extremities, buzzing in the ears and faintness, and is especially useful after the profuse discharge has ceased, in the periods between the menses, as a part of the constitutional treatment. It should be given in doses of five to ten drops of the tincture three or four times a day during the interval between menstruation. Elixir of iron and Calisaya bark, a teaspoonful three times a day, is an excellent preparation.

[Hydrastis, twenty drops of the tincture three times a day, will cure the most severe cases.—HALE.]

SUPPRESSED MENSTRUATION.—AMENORRHŒA.

Suppression, if not a symptom of pregnancy, is generally due to exposure to cold, damp feet, violent emotions, fright, and the like. Sudden suppression causes the most acute pain, but a chronic form is far more serious and points to some constitutional disease.

TREATMENT.—If the menses are suddenly suppressed during the period, the sufferer should immediately be placed in a hip-bath, the water being more than simply warm, some cases needing it as hot as can be endured. Then she should retire to a warmed bed. A few doses of aconite should be given at short intervals; also copious drinks of cold water. The success of this treatment depends upon the promptness with which it is adopted. Xanthoxylum will relieve cases attended with severe, cramp-like pains in the ovaries, five to ten drops of the tincture being taken as the dose. Cimicifuga is an excellent remedy when suppression results from a cold, and may be given in alternation with aconite, five to ten drops every two or four hours. [Pulsatilla, two drops of tincture every twelve hours.—HALE.]

Chronic suppression is generally observed among the early symptoms of consumption in girls and women; the secretion becomes less and less until it is completely checked. The cause of the suppression and the co-existing impairment of the general health should be carefully sought out and removed if possible. All hygienic rules should be scrupulously observed, and everything that is calculated to give constitutional vigor should be resorted to. In expecting a return of the menstrual discharge, the exercise of patience is sometimes necessary, as the general health is often greatly improved before this function is re-established.

PAINFUL MENSTRUATION.—DYSMENORRHŒA.

Menstruation should be painless, but there are abnormal conditions which make it exceedingly painful in some, and measurably so in others.

These conditions have been called by physicians neuralgic, congestive, inflammatory, and obstructive.

The neuralgic form, as its name indicates, affects persons inheriting a nervous temperament. It may also occur where the development of the pelvic organs is incomplete, or it may result from adhesions being formed and a nerve becoming impinged. The pain will usually come before the flow, and may be elsewhere than in the pelvis, often in the head, and as often in one of the ovaries. Those who suffer from this form are weak and pale, giving evidence of a deficient supply of blood. The frequent application of the galvanic current for several successive months is a good stimulant. A change of diet, life in the open air and sunshine, or a change of climate, especially from cold to warm, will do wonders in toning up the general health and relieving the sufferer.

The congestive form is an attendant of congested liver. Cold is the most common cause; it may also arise from sudden emotion, deviations and displacements of the womb, possibly tumors or polypi. There is pain in the bladder and rectum, with bearing-down; restlessness; headache. If caused by cold, the patient should use warm hip-baths before the time for the flow, and keep quiet and warm. If displacement be the cause of the pain, replacement will often give the desired relief.

The inflammatory form depends upon a diseased condition of the lining membrane of the womb; the pain is dull, heavy, persistent, usually begins before the flow, and continues as long as it lasts, and even five or six days after it has ceased; the blood is apt to be clotted, and there will be membranous shreds and fragments mixed with the discharge. Those who suffer from this form will experience pain while walking. Such cases are curable, but time, opportunity, and a full determination to regulate the life and habits with entire reference to such results, will be required. The galvanic current to stimulate the muscles is excellent. Massage, or the passive movements of the muscles, would have a tendency to divert the blood from the diseased pelvic organs to other parts of the body and thus relieve. Swedish movements, judiciously given, would act in a similar manner.

The obstructive form depends upon an impediment in the uterine cavity, causing a diminution of the body or neck of the womb. It may exist at birth or be acquired by the application of strong caustics, or by falling in childhood upon some sharp object. Now and then parturition is followed by sloughing and constriction of the tubes. A polypus of the neck of the womb may produce an obstruction, and a tumor will occasionally be in the way. Let the obstruction be what it may, the menstrual fluid must ultimately be discharged.

We see that painful menstruation may be due to local causes or to a

general one, as debility for example. When the symptoms do not yield readily to the use of one or more of the following remedies it is best to consult a skillful physician and have a thorough examination of all the pelvic organs.

TREATMENT.—*Cimicifuga* exerts a specific influence on the womb and gives great relief, more especially in nervous and rheumatic persons. *Belladonna* is most suitable to women of a fleshy habit and great mental activity, with flow of blood to the brain; throbbing headache; redness of face; dimness of vision; violent pain in the back. Give *aconite* for menstrual colic, with spasmodic pain; heat in the head; cold feet from disturbances of the circulation. *Gelsemium* is indicated by simple spasmodic cases of difficult menstruation. *Nux vomica* is the best remedy for obstinate constipation and accumulations of *fæces* in the rectum, causing pressure on the neck of the womb and so rendering the escape of the menstrual fluid difficult and painful; frequent desire to urinate; paroxysms of pressing and drawing pain. Flatulence and symptoms as of piles often attend this variety of the disease.

Pulsatilla is valuable for scanty menses attended with cutting pains in the uterine region and back, which move from one point to another; loss of appetite; chilliness; vertigo. This remedy is especially suited to females of light complexion and mild disposition. *Ergot* is called for by labor-like pains at the time of the appearance of the menses, these being discharged with great agony, cutting pains in the bladder or rectum, pale face, cold sweat, and indistinct, flagging pulse. *Viburnum opulus*, or cramp-bark, has long had a reputation in the domestic treatment of this disorder and was used by the aborigines. It is indicated by severe cramp-like pains preceding or accompanying the menstrual flow, and should be given in doses of five to ten grains every one or two hours until relief is obtained. The following prescription will be useful in many cases:

Tincture viburnum,	1 ounce.
Tincture xanthoxylum	1 ounce.

Mix. Take fifteen drops twice a day during the interval between the menstrual period, and the same dose every two hours during the first day of the appearance of the menses, or until pain ceases. *Scutellaria*, fifteen to twenty drops every two hours, will often relieve when the pain is intense.

During the period, great relief will be experienced by applying hot bottles, or flannels wrung out in hot water, to the lower part of the abdomen, or by a warm hip-bath in which the patient may remain for twenty or thirty minutes. When the disorder is the result of mechanical constriction of the uterine canal, means should be taken to remove such trouble. This

can be done only by a skillful physician; and, if medicinal treatment fails to relieve the sufferer, no sense of modesty should stand in the way of an early application to one, with a purpose to adopt his advice and treatment.

[*Caulophyllum*, in doses of one-tenth to one-eighth grain, is far superior to ergot for the same symptoms. It should be taken three times a day for a week before the expected menses and every two hours during the pain. All remedies for painful menses should be taken thus, a week or two previous to the period. *Hydrastis* tincture, in twenty-drop doses three times a day through the month, has been found very successful. The most severe cases of dysmenorrhœa I have ever seen were cured by tincture of Indian hemp (*cannabis Indica*), five drops three times a day for three days before and every three hours during the pain.—HALE.]

LEUCORRHŒA.—WHITES.

Few women are entirely free from this malady, which may be called a simple catarrh of the female generative organs, with a variety of causes, and being either constitutional or local, sometimes both. Any habit or disorder which debilitates the constitution or lowers the tone of health is likely to be accompanied sooner or later with a leucorrhœal discharge. Colds, congestion, sedentary habits, scrofulous constitution, profuse menstruation, too frequent confinements, excessive intercourse, abnormal growths in the womb, as polypi and tumors, want of cleanliness, and worms are some of the more common causes. The disorder occurs between the ages of puberty and the cessation of the menses. There is also a variety, called infantile leucorrhœa, that occurs in scrofulous children, caused by a sudden check of perspiration, exposure to cold, manual irritation, worms, infected sponges, and like agencies. Mild cases may exist for years without giving rise to any very marked symptoms. Yet it should not be neglected, for it is possible to be entirely free from it.

TREATMENT.—*Calcarea carbonica* is needed in those cases following too profuse and too frequent menstruation; discharge of a milky appearance, worse just before the menses and just after; women who are weakly and scrofulous; chronic leucorrhœa; for children, the discharge being milky. Give china or Calisaya bark after debilitating diseases which have produced leucorrhœa. When indigestion and debility co-exist, with abrasion or ulceration on the surface of the parts, *hydrastis* should be administered; it should also be used locally, a half-teaspoonful of the extract to an ounce of water. *Mercurius* will be found efficacious for sallow complexion; cold feet; backache; profuse menstruation; discharge yellowish and containing matter-like pus. *Pulsatilla* is useful when the discharge is a thick, white

mucus, corrosive, and a cause of itching; also when occurring in girls who have not menstruated, or in pregnant women. *Sepia* is an excellent medicine, and is suitable for yellow, greenish, or fetid discharge; delicate, unhealthy skin; backache; bearing-down pains; constipation. In low states of the system iron or quinine will be serviceable in toning up the system.

Constipation is a fruitful cause and in all cases the bowels should be kept in a normal condition; but the continued use of purgatives cannot be condemned in too strong terms. Proper diet, exercise, and cold sponging of the back and loins will relieve the constipation.

Pinus Canadensis, applied to the vaginal walls and neck of the womb after the free use of hot water with a fountain syringe, will cure the worst cases. This may be used in the following manner:—Take one part of extract of *pinus Canadensis* and two parts of glycerine; mix thoroughly; apply to the parts with a camel's-hair brush, or with a pledget of absorbent cotton. Bichromate of potash will also be found an excellent local application: Take one teaspoonful of the crystals and three ounces of water; mix and dissolve; after washing the vagina with hot water, take of this solution one teaspoonful in two ounces of water and inject into the vagina.

It is claimed that leucorrhœa in the mother is a prolific source of scrofula in the child, that the fœtus is insufficiently nourished, and, after birth, convulsions, hydrocephalus and scrofulous marks present themselves. It is doubtless true that a profuse or long-continued discharge from the mother may occasion a debilitated condition in the child which will be favorable to the development of scrofula, but it cannot be true that leucorrhœa will always be followed by appreciable effects in the child. If it were, few children would be free from scrofula.

[Leucorrhœa in a pregnant woman at the time of confinement is often a cause of inflammation of the eyes of the new-born child. The mother should use for a week previous to labor a vaginal injection three times a day of the following mixture:

Borax,	1 teaspoonful.
Fluid hydrastis,	1 teaspoonful.
Warm water,	1 quart.—HALE.]

CHLOROSIS.—GREEN-SICKNESS.

The characteristic color of the skin has given the name "green-sickness" to a disease which occurs especially in young women between the ages of fifteen and twenty-five. Unlike the pallor of other forms of illness, the skin has a greenish-white appearance; the face becomes puffy; there are dark circles surrounding the eyes; the lids are swollen; the lips are

very pale; respiration, digestion, and circulation are much disturbed; the pulse is usually, not invariably, slower and weaker than in health; palpitation is not uncommon, but the most marked symptom in the circulation is the continuous humming, cooing sound to be heard over the region of the heart and the large vessels of the neck. The gastric disturbances are very serious; there is loss of appetite, with unnatural craving for such articles as chalk, slate pencils, and the like; the breath is very offensive; persistent vomiting and even vomiting of blood sometimes occur, indicating ulceration of the stomach.

Chlorosis seldom exists without menstrual irregularities, either suppression or retention, with profuse leucorrhœa. The mental and nervous conditions are especially prominent. The subjects of this affection are generally of the lymphatic temperament and become listless, dull and melancholy. It is most common among the higher classes of society. The predisposing causes are confinement in poorly ventilated, imperfectly lighted, or shaded rooms; chronic inflammation of the intestinal canal; enlargement of the glands connected with the intestines; abnormal excitation of the sexual organs; uterine or ovarian disease; innutritious food.

TREATMENT.—Give arsenicum for extreme debility; puffiness of the eyelids; swelling of the feet; morbid craving. When there is a tendency to scrofula or consumption, with glandular enlargements, calcarea carbonica is indicated. Phosphoric acid is valuable for great debility; listlessness and apathy; night sweats; leucorrhœa; especially if chlorosis is due to continued abnormal excitation of the sexual organs. Scanty or absent menses, loss of taste or appetite, tendency to relaxed bowels, and a weeping mood are best treated with pulsatilla. The advertised "sure cures" all contain iron in some form; while iron is undoubtedly efficacious in some cases, its indiscriminate use must not be countenanced, and it is to be given only under advice and its effects are then to be carefully watched. It will be found most useful when the disorder is attended with poor appetite; scanty or absent menses, with a pale or watery discharge. It is especially suited to scrofulous persons.

[The two best preparations of iron for use in chlorosis are Warner & Co.'s "Chalybeate Pills" and Chapman & Green's "Iron, Digitalis and Wild Cherry." If there be great nervousness, twitching, hysterical actions, faintness, sighing, etc., give ignatia, one drop of the tincture before meals and the iron after meals.—HALE.]

Accessories to the above remedies are good, nourishing food, as milk, oysters, beefsteak, brown bread, and the like. Exercise in the open air, sun-baths, sea-water baths, cold bathing, commencing with a tepid bath and gradually lowering the temperature, deep breathing, and watchfulness against all pernicious habits are of much importance and value.

HYSTERIA.—HYSTERICIS.

Hysteria is a nervous disease of either a local or general origin, marked by a morbid sensibility of the nervous system and due to a variety of causes. It is almost entirely confined to women and girls, and is very often associated with uterine difficulties. It may be brought on by any of various functional disturbances, or may be caused by prolonged worry, undue study, loss of friends, sleeplessness, unusual continuance of the secretion of milk, disappointed affections, in short, whatever jars upon the sensitive nature of the girl or woman. The male sex is not entirely exempt, although the word hysteria, signifying a womb, implies that it is peculiar to the female, the ancient belief being that there was some connection between that organ and the various phenomena known as hysteria. The symptoms are multitudinous. Sometimes the closest medical observer is unable to detect any functional disturbance. The element of exaggeration enters so largely into the hysterical constitution that suffering which would be slight in a less sensitive temperament is greatly magnified. The fanciful nature of the hysterical patient's suffering may sometimes be demonstrated by simply diverting the attention from the part complained of and then causing firm pressure or movement; this will be borne without complaint, when otherwise it would have been "agonizing in the extreme."

The most common types of this disease occur in young girls who have grown rapidly and studied hard at the same time, leaving the nervous system quite exhausted. They laugh immoderately, cry easily, and suffer from indigestion, palpitation and backache. Some have palpitations, flushings, and sometimes loss of voice for days and weeks at a time; when these attacks last longer than usual, the wind rises in the throat and a sensation as of a ball fixed there is experienced until relieved by a crying fit and the discharge of a large quantity of almost colorless urine. Other cases arise in those who are constitutionally delicate, and made more so by being constantly reminded of the fact by unwise friends who pet, indulge and caution the girl until she thinks her every ache and pain of consequence enough to call the whole family to sympathize with her. A paroxysmal form of hysteria may be caused by some real or imaginary grievance; the patient will fall, with an apparent loss of consciousness and all voluntary power; the breathing may be irregular and the eyes be partially closed; the patient seems to be in a dangerous condition. Unlike epileptic fits, the attacks are not followed by profound sleep. Much anxiety or alarm, or even an expression of sympathy from friends and attendants, usually aggravates all the conditions. The patient seems to delight in frightening others by simulating various alarming symptoms.

TREATMENT.—Loose the clothing and give plenty of fresh air. Dash cold water on the face and neck. Pour water from a large vessel, lifted to a considerable height, upon the mouth and nose to effect a spasmodic opening of the mouth and the taking of a full breath. In dashing water on the face and neck, use it in large quantities applied with considerable force.

Belladonna and chamomilla are the best internal remedies during the paroxysm, especially if the face is very red. Asafoetida is efficacious for cases arising from bilious disturbance; distension of the abdomen; high-colored urine with a strong smell; sensation as of a ball rising in the throat. The odor from a piece of asafoetida placed under the nose has relieved the spasm. When hysteria is attended with congestive headache, excessive menstrual discharge and melancholy, aurum will be found of value. Cimicifuga, in doses of five to ten drops, is useful for hysteria associated with uterine disturbance; mental restlessness; irritability; despondency; sinking at the stomach. Ignatia will relieve hysteric convulsions with the sensation of a ball in the throat; great difficulty in swallowing; hysteria from disappointment, mortification, or any other intense mental excitement. Moschus is invaluable for hysterical attacks of fainting; small, fluttering pulse; flushed face followed by paleness and excessive sweats on the head; great anxiety; coldness of the surface. Moschus and camphor are both especially effective during a paroxysm and often cut it short, but they are of no service between the attacks. Nux vomica is the best remedy when hysteria is attended with constipation, flatulence, hiccough, distension and pain in the stomach, headache, giddiness, and faintness. Use valerian in fifteen-drop doses for hysterical spasm occurring chiefly in the evening; "lumps in the throat;" clear, profuse and watery urine; great emotion; tendency to cry. Bromide of soda or potassa will often relieve at once; a dose of ten to twenty grains may be given at intervals of two to five hours until relieved. [To relieve a persistent spasm of any kind, grasp the big toe of the patient and bend it strongly downward toward the sole of the foot. It will cause the most powerful spasm (hysteric) to relax in less than a minute.—HALE.]

Between the spasms much may be done to give a healthier tone to the system by cheerful society, regular exercise in the open air, useful employment, avoidance of occupation that favors meditation, and removal from the surroundings that have been favorable to the development of the disease. Send the girl away from home and throw her somewhat upon her own resources. Petting and injudicious expressions of sympathy do much harm. All stimulants should be avoided, as well as late hours in crowded, brilliantly lighted, overheated rooms, novel reading, all undue excitement of the emotions. Professional counsel should be sought to ascertain whether there are any local exciting causes and to remove any that exist.

FALLING OF THE WOMB.

Falling of the womb consists in a descent of this organ in different degrees, from simple "bearing down" upon the upper portion of the vagina to complete protrusion of the organ from the vaginal canal. It is most liable to occur in married women beyond middle life, but is often found in young unmarried persons of relaxed constitutions. The symptoms are numerous and vary in different cases; those most commonly present are bearing-down sensations in the vagina; dragging and aching pains in the small of the back, around the loins and hips; frequent sensations as if everything would escape from the vagina, with a consequent tendency to put the legs as close together as possible when standing; a whitish, mucous discharge; menstruation often increased, sometimes diminished; frequent desire and often inability to urinate; nervousness; irritability; indigestion; constipation. These symptoms are aggravated by standing, walking, and lifting, while the horizontal position gives relief.

The immediate exciting causes of this displacement are injury from some sudden fall; hard lifting; straining; jumping; improper dressing; severe exertion during menstruation; indigestion; sexual excesses; getting up too soon after child-birth, while the womb is larger than usual and its support is weakened by parturition. There is abundant reason for believing that improper dressing is one of the most fruitful causes of falling of the womb, as well as many more of the diseases which affect the pelvic organs. Garments too tightly fitting and arranged for continuous and uniform pressure can hardly fail to aggravate the diseased condition where already existing, and are peculiarly favorable to the production of many of the diseases in the contents of the pelvis. The regular motions caused by respiration, of which the diaphragm is the central force, extend in both directions, downward as well as upward, producing a wave-like movement through the entire contents of the trunk. This is necessary not merely to the organs of respiration, but the digestive organs require the gliding action of the contiguous parts upon each other to perform their functions readily and completely. This movement stimulates nutrition and aids the progress of digesting matters in their passage along the canal, as described in the anatomy and physiology of Chapter IV. It also promotes the absorption of digested products by the veins and lacteals. The contents of the pelvis likewise require the influence of this motion. This pump-like action of the respiratory organs extending to the pelvic contents, as it always should, has the effect of relieving it of the otherwise continuous pressure and weight of the abdominal organs. The interruption of this motion will sooner or later result in disease. It is then a matter of the gravest importance that there

should be no hindrance or external resistance to this spontaneous action, this deep abdominal breathing so necessary especially to the health of every woman.

The mechanical effect of compression can easily be illustrated by means of a common rubber bag containing air. If this be pressed between the thumb and finger the part most distant from the pressure becomes most distended and thin. If the pressure be increased, a rupture occurs. Now precisely similar is the effect of pressure upon the central portion of the body; the greatest tension is felt at the end of the cavity of the pelvis. Tight clothing and corsets make a continuous downward pressure, to which is added the weight of heavy skirts hung upon the hips, not only preventing this undulating respiratory movement, but also causing a descent of the diaphragm upon the bowels, which in their turn press down upon the womb, compelling this organ to double upon itself, or turn backward or forward, or go straight down and out. We thus have what is commonly known as falling of the womb, retroversion, or flexion, sometimes with ulceration or inflammation. The prevailing style of high heels for the shoes is also prejudicial and a cause of displacement of the womb. The effect of unnaturally raising the heels and stretching the insteps is to bend the knees forward and hips backward, necessitating an inclination of the trunk; this presses the abdomen down upon the contents of the pelvis.

TREATMENT.—It goes without saying that the most important thing to do in a case of falling of the womb is to remove all pressure from above. Loose the corsets; wear shoulder-straps on all the skirts; breathe deeply; if the case is recent, take the horizontal posture, with the hips elevated. It is not desirable to remain long in bed, for the reason that the general health will suffer from lack of fresh air and exercise; sometimes a support introduced through the vagina will be necessary. It will give temporary relief, but it should be accurately fitted, be worn only a few weeks at a time, never be resorted to except upon medical advice, and always be discontinued if it causes irritation and nervousness.

[Belladonna, one drop three times a day, is efficacious when there is a feeling as if the womb would be pressed out of the body, with soreness of the lower bowels, especially when walking or coughing. Sepia is useful in all displacements with the usual symptoms of bearing-down pain in back, sinking in stomach, leucorrhœa, etc., a dose three times a day.—H.A.I.E.]

Nux vomica is useful when a displacement is attended with a constant dribbling of urine; indigestion, flatulence, piles, constipation with straining at stool and the passage of lumps of hardened fæces; pain in the back; pressing pain over the hips.

Since this difficulty often results from a debilitated state of the system,

tonics and other means of building up the strength will afford relief. Constipation produces or attends a majority of cases and should be thoroughly treated, for which purpose the reader is referred to the article on Constipation in a previous chapter. Again, such displacements often follow child-bearing, being caused by laceration or tearing of the perineum, the floor of the pelvis. When such is the case, a bandage that fits the abdomen closely and is secured by a band passing between the limbs should be worn. A pad may be attached to the band in such a way as to press on these parts and raise them up. Such mechanical treatment is only temporary and is to be stopped when a surgeon is secured to perform the requisite operation.

[*Lilium tigrinum*, or tiger lily, is an excellent remedy for uterine displacements with ovarian pains, ten drops of the tincture being put into a half-glassful of water, and a teaspoonful of this being taken every three hours, or one of the flowers in a teacupful of hot water, a teaspoonful of the decoction being taken every three hours after it cools.—HALE.]

INFLAMMATION OF THE WOMB.

This disorder may take place in any adult female, and is not infrequently a serious complication of pregnancy and child-birth. It may be acute or chronic. The ultimate and common tendency of inflammation of the deep-seated tissues of the body and neck of the womb is ulceration. An attack may commence with a chill, followed by fever, great thirst, nausea, vomiting, sometimes diarrhœa, perhaps vain desire to evacuate the bowels; irritable bladder; throbbing in the vicinity of the womb, the latter being swollen and painful; the recumbent posture is a necessity, as sitting aggravates the pain; the disease sometimes assumes a typhoid character and there is excessive prostration, with a dirty-yellow coated tongue. The causes of inflammation are exposure to cold, especially during the menstrual period; sitting on cold or damp objects, as stone steps and grass; sexual excesses; suppression of the menses; mechanical irritation, as a too long use of appliances to support the womb. It also follows abortion, and may be caused by the use of cold water injections into the vagina immediately after coition.

TREATMENT.—Aconite and belladonna should be administered in alternation every hour upon the approach of the disorder; as improvement sets in, these two remedies may be given less often. After the inflammatory symptoms have subsided, mercurius is useful in completing the cure. *Nux vomica* is invaluable if there be constipation, bearing-down, and desire to go to stool. *Sepia* will be efficacious if leucorrhœa follows, with urine scanty and passed with pain and irritation. The diet should be very simple

and unstimulating, with cooling drinks. In the first stages, a hot sitz-bath may be used for ten to twenty minutes, a cold wet cloth being meanwhile kept on the head, the feet being at the same time in a tub of *warm* water.

When this disease is not promptly attended to and cured, it runs into a chronic condition; the patient shows a general loss of health and strength; there is apt to be a yellowish, greenish discharge from the womb that is more or less offensive in odor; the body of the womb is intolerant of pressure; the ovaries and Fallopian tubes are more or less diseased; there is chronic ulceration of the neck of the womb, and its lining membrane is more or less diseased and is thrown off in shreds and pieces. Nothing but thorough, skillful treatment, local and constitutional, can offer any hope of a permanent cure. Hence, none but those who are experienced in such disorders should attempt the treatment of this kind of inflammation.

INFLAMMATION OF THE OVARIES.—OVARITIS.

The exciting causes of this disease are somewhat obscure; generally it is sympathetic with inflammation of the womb, or it may be caused by a cold, by coition during the menstrual flow, or by strong medicines applied to the womb. Only one ovary is inflamed at a time.

The acute form sets in with sudden pains in the region of one or the other ovary; more commonly the pains are dull and indefinite, stinging and burning, and aggravated by hard pressure; no swelling can be felt. The pain extends to the thigh, which feels numb and is made worse by motion. There is but little fever, but various nervous derangements set in similar to hysteria, even overpowering sexual desires and vomiting may occur. Only in rare cases does it terminate in suppuration.

If no dispersion takes place, the inflammation becomes chronic. In this form a swelling can be felt externally, associated with tenderness on pressure and violence of pain just previous to and during the menses, or during pregnancy and confinement. An acute attack rarely lasts longer than eight days and generally subsides within twenty-four hours. The unfavorable cases that become chronic may terminate in the formation of serous cysts, a hard lump, or in suppuration.

TREATMENT.—Give aconite for headache, backache, colic, fever, great restlessness and tossing about; after exposure to cold winds, or a sudden fright during the monthly period, by which the flow ceases; and for painful urging to urinate and to evacuate the bowels. It will lessen the fever and relieve the inflammation. Give belladonna for hard swelling of the ovary, with stitching and throbbing pain; constant bearing-down, as if everything

would come out; fever; perspiration; glistening eyes, red face and delirium; soreness over the whole abdomen, with bloating.

Hamamelis is a superior local application for the relief of pain, especially if the inflammation arises from a blow or strain. It should be applied to the abdomen by means of cloths wet in the extract, being as hot as it can be borne. Hot fomentations of various kinds are useful, as are also poultices of linseed-meal, hops, bran, and other materials.

OVARIAN TUMORS OR CYSTS.

The most of these tumors or cysts originate in a degeneration of the follicles which supply the secretions to the mucous membrane of the ovary. They become distended, sometimes being as large as a child's head, and one or several may be formed. They are filled with a clear, yellowish, serous or thick fluid. The symptoms in the first stage may be identical with those of ovaritis mentioned above, but usually all such manifestations are wanting and the cysts cause no inconvenience as long as they remain small. When they attain a certain size, however, they produce a pressure upon the bladder and rectum, causing difficulty in urination and the action of the bowels. Pressure upon the nerves which run down on the back part of the pelvis causes pain in the small of the back, or pain and numbness in the lower extremities; pressure upon the veins induces swelling or varicose veins. At the same time, in some cases there will be a swelling of the breasts, a darkening of the ring about the nipples, sympathetic vomiting and general bad feeling, resembling very closely the experiences in the beginning of pregnancy. When the cysts grow larger they rise out of the pelvic cavity and give some slight relief from pressure. As they continue to grow they gradually fill up the abdominal cavity and press upon the diaphragm, the consequence being shortness of breath, palpitation of the heart, deficient nutrition, vomiting, and general wasting of flesh and strength.

TREATMENT.—This difficulty belongs to the field of surgery and its management should be entirely under the care of one of experience. To relieve the disorders which result from it, such as pain and disturbance of various functions of the body, medicines may be of service, but the reader will find their indications in the articles respectively devoted to them. When the tumor has reached a certain size and the health becomes impaired, an operation should be performed. Within the past few years great advance has been made in this department of surgery and comparatively few cases result unfavorably when skillful hands are applied. It may not be amiss here to say that a condition of pregnancy has occasionally been mistaken for tumor, and *vice versa*.

CESSATION OF THE MENSES.—CHANGE OF LIFE.

In every healthy woman menstrual life continues for about thirty years. If menstruation began at twelve years of age, then it would cease at forty-two; if at fifteen, not far from forty-five. Cessation with some is at fifty or later; exceptional cases occur as early as thirty. Notwithstanding the change is in accordance with nature's laws, there is commonly more or less disturbance of the general health. With some persons it is gradual, extending two or three years; one period is missed, and then there is regularity, several months more perhaps elapsing without an appearance of the menses; then a scanty discharge occurs; an excessive flow may come on, and after a while the discharge is so slight as to attract no attention. During this time, there is more or less discomfort, with much anxiety as to the final result. If excessive and prolonged flooding occurs, there is often reason for consulting a physician to ascertain whether there be a uterine polypus, tumor or some malignant growth, as cancer.

With some women menstruation ceases abruptly, and there is anxiety as to whether it is due to pregnancy or cold. When caused by a cold or shock, nature sometimes takes the opportunity, if late in life, to terminate the function. It is not strange that there should be vertigo, headache, flushes of heat, great nervousness, pains in the back and loins, urinary difficulties, and like symptoms, when we consider that all the elements previously appropriated by the function of reproduction are suddenly thrown into the general circulation. The system has not yet adjusted itself to the new order of things, and abnormal conditions sometimes result from an undue supply of nutrition to some part or organ. Nor is it surprising that at this time of general disturbance any hitherto latent disease may be aroused, stimulated by the general activity. Much however may be done to prevent any disastrous results following the critical age.

The main point at this time is to so regulate the life and habits that the blood-currents may be as little disturbed as possible. There is an intimate connection between the sexual and the nutritive functions. The nutrition that has been supplied to the organs of reproduction and is now suddenly thrown into the general circulation causes a sense of fullness and oppression; the head and the heart ache and the nerves are much deranged during the breaking up of the function.

TREATMENT.—The strictest hygienic rules should govern the woman who desires to go safely and comfortably through this change. She should live in the open air as much as possible; breathe deeply; exercise moderately, but not to great fatigue. Her mind should be well occupied with everything but her own aches and pains. The skin should be kept active by daily

sponge-baths and plenty of friction. The diet should be light and nourishing; if there is a tendency to corpulency, a less quantity of food should be taken than before, the fat-forming kinds be avoided, and no stimulating beverages be used. The clothing should be warm and care should be taken to keep the limbs and feet both dry and warm.

As the "change of life" is a natural condition, little can or should be done in the way of treatment aside from such measures as have just been mentioned for maintaining the general health in as good a condition as possible. Yet there are many unpleasant symptoms which are amenable to treatment, some of them purely nervous, others due to flatulence and other derangements of the bowels; but it is always important to apply to good counsel. *Cimicifuga* will be of service in correcting numerous symptoms, as pain in the breasts and other parts intimately associated with the womb; pain in the top of the head; sinking of the stomach; restlessness. Five drops may be given three or four times a day. *Nux vomica* acts well if there be constipation, headache, bloated feeling in the stomach and bowels, and cramps in the limbs. As the liver is one of the main organs to be disturbed, *podophyllin* will often be of service. *Trillium* is efficacious for flashes of heat passing over the body and followed by difficult breathing and sweats. [*Sanguinaria* is excellent for the last symptoms.—HALE.]

ULCERATION OF THE WOMB.

Cases of actual ulceration of the womb are of very rare occurrence, and when they do occur need the services of a specialist. What is commonly called ulceration is an "abrasion" or "erosion" of the mouth and lips of the neck of the womb. This disease is very common, because it arises from the commonest of all disorders, namely, *catarrh*. Catarrh of the womb is brought on by a cold. It may show itself in the head, then in the throat, with cough, then in the bowels in the form of diarrhoea, and finally in the womb, causing *leucorrhœa*. This discharge arises from the inside lining of the womb. It runs out through the neck of the womb, excoriates the lips, makes them look raw, just as a nasal catarrh excoriates the upper lip and nostrils. When seen with a speculum, the lips of the womb look angry and red, like a strawberry. If neglected, this erosion may go on to superficial ulceration. The surfaces bleed when touched. The bloody discharge may be brought on by walking much, as the excoriated lips chafe on the lower surface of the vagina. If a woman has profuse leucorrhœa, which sometimes causes an itching and burning of the vagina and vulva, if the menses come on a week or so too soon, and are more than usually painful, she may be pretty sure she has erosion or ulceration of the womb.

TREATMENT.—Women can treat themselves for this form of ulceration, and cure themselves in a majority of instances without the aid of a physician, if they will follow out the following directions:—Take internally calcarea carbonica, third trituration, every morning and night a small powder. Take after each meal one grain of arsenicum, third trituration, or one drop of Fowler's Solution of arsenic after each meal. For local treatment, use an injection into the vagina of one pint of warm water in which has been dissolved half a teaspoonful of borax.

Procure from a druggist some surgeon's cotton ("borated cotton," "absorbent cotton") and make of this cotton little pads, about the size of a pressed fig or small flat tomato. With a large needle run a small cord through the center of the pad and then back, and tie the ends about four inches from the pad. This cord is to withdraw the pad with. Procure some "calendula cerate," or a salve made after the following formula:—

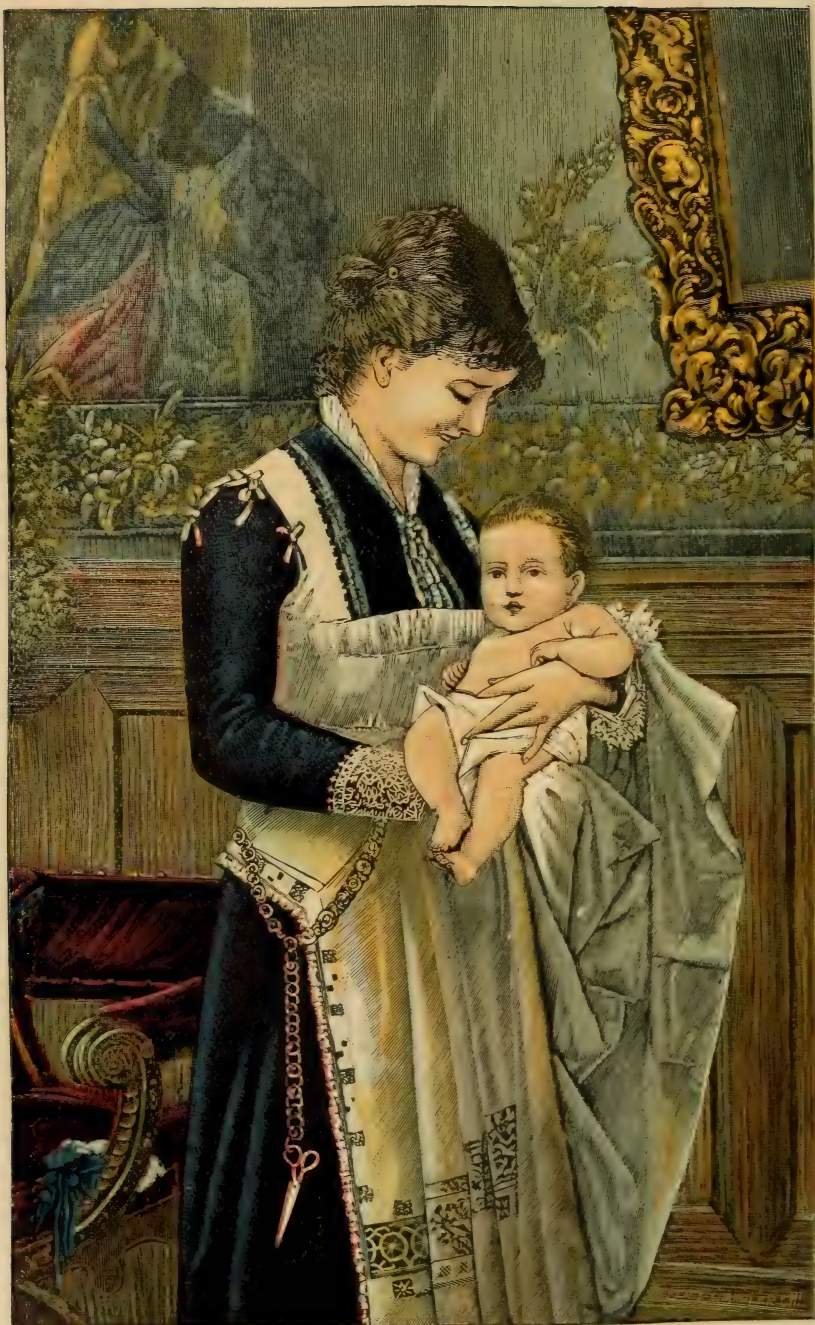
Balsam Peru,	1 drachm.
Fluid extract eucalyptus,	1 drachm.
Boracic acid,	1 drachm.
Vaseline,	2 ounces.

Mix.

The pad of cotton is to be smeared all over with one of these salves (the latter if the leucorrhœa causes much irritation). Then every night push a pad up into the vagina with the finger as far as it will go, usually the length of the finger. It will then rest against the mouth of the womb and come in contact with the eroded or ulcerated surface. Continue this application all through the month except during the menses. Keep quiet during the menses, and during a few days previous. This local treatment is advised by some of the best gynæcologists of Europe and America, and was originally recommended by the late Dr. G. Marion Sims. Its discovery was a great boon to suffering women.







CHAPTER XIII.

THE MOTHER AND HER BABE.

SECTION I.

THE MOTHER.

MARRIAGE AND PARENTAGE.

MAN and woman are complementary to each other, mutually dependent for health, happiness and virtue. Marriage is necessary to the perfection of their being, and if suitable and happy will lengthen life. One of the objects of the conjugal union is the transmission of life, and it is a solemn duty to insure to the offspring as vigorous minds and bodies as can be secured by the most conscientious pains-taking. To be sure, the responsibility rests upon both the husband and the wife. If their growth or development is defective, there must be imperfection in the offspring. No organism should reproduce while it is itself incomplete, a remark which may be applied to early marriages. When the marital relations are assumed too early, the development of the prospective parents will be more or less arrested, and their offspring will have a heritage of proportionate feebleness. It is impossible to fix an age for all individuals at which marriage is advisable, because some arrive at the requisite maturity earlier than others. Though it is often said that the proper age for the woman is from twenty to twenty-three and that for the man from twenty-three to thirty-three, the figures seem quite arbitrary, and it is safer to say that both should attain to a healthy and substantial maturity. Yet it is important that the development be both physical and intellectual, for the two kinds are so far from always co-existing that they often exhibit a marked contrast. Besides, the moral part of one's being exerts such an influence upon the mind and body that on both physiological and higher grounds it must be admitted that the happiest issue of marriage can be experienced only when the moral sense of both husband and wife is pure and elevated. Though education and proper attention to

the laws of life and health may improve an imperfectly organized embryo or child, the fact remains that the quality of the germs furnished at the period of impregnation will influence the offspring throughout life. It is therefore a matter of serious moment that the expectant father and mother maintain the best possible health, with temperance in all things, the mind being cheerful and elastic, and the body active and vigorous, in short, with all possible essentials of good health. Parents who transmit disease or weakness to their offspring, causing it to decay before its full development or linger on in pain and debility, are certainly infringing upon the most sacred rights of posterity. We now speak more particularly of the mother.

MATERNITY.

From the beginning of the divergence of the two sexes which was spoken of in the last chapter, the girl gives more or less marked evidences of those instincts and affections which develop with her age, and are called maternal in her later years. These are a natural and inseparable part of her being, a spiritual element of her life, whose purity, strength and elevation very largely determine the type of a woman that she is to be. When she becomes a wife, their intensity is heightened until the impulses to maternity take rank among the strongest and noblest of the human breast. Conscious however that increased responsibilities are to be imposed upon her by maternity, with more or less anxiety and even pain, she very naturally wishes to know how to care for herself during the periods that precede and follow the birth of her babe. With such matters we are now concerned.

SIGNS OF PREGNANCY.

When a young married woman in good health ceases to menstruate she should know that she is probably pregnant. Absence of the menses is the rule in pregnancy, though there are exceptional cases in which the discharge takes place regularly during the continuance of this condition. In most cases "morning sickness" occurs at any time from two to six weeks after conception, and is one of the most annoying and disagreeable experiences of pregnancy. A sensation of fullness, with a throbbing, tingling pain in the breasts, accompanied with their enlargement, is one of the signs which are less evident to others though especially noticeable to the prospective mother. The delicate pink-colored circle around the nipples seen during maidenhood becomes several shades darker. This is more especially true of the first pregnancy, and the original color does not return. The presence of milk in the breasts is considered very conclusive evidence of pregnancy but it is often

unreliable, for there are diseased conditions of the womb that affect the breasts sympathetically and cause milk to flow into them.

Two months after conception the bowels are somewhat elevated and in the third month an enlargement of the abdomen may be perceived. At the fourth the womb rises out of the pelvis in the form of a hard round tumor and increases the prominence of the whole abdomen. At the sixth it rises to the navel, and at the ninth it reaches the highest point and begins to descend. Abdominal enlargement may be due to other causes, as there are a number of diseases which might produce it.

“Quickening” is the term applied to the mother’s first perception of the movements of the child. It is the time when the pregnant womb becomes too large to remain longer in the pelvis, and rises, sometimes suddenly, into the abdomen, causing slight faintness and sickness. Something similar to this sign may also be caused by flatus in the intestine. Other evidences of pregnancy might be mentioned, but they are usually of such a nature that none but the experienced physician or nurse can discover them. Enough have been named to determine to an almost absolute certainty when the condition exists. Now what care is requisite?

HABITS DURING PREGNANCY.

DIET.

The regulation of the diet should have reference to (1) health and comfort during pregnancy, (2) freedom from pain and danger in labor, and (3) a good condition of both mother and child after parturition. The assumption that a pregnant woman needs more food than before has no valid foundation, and has led to much harm. A little work at figures would show that the increased amount of nourishment required for the growth of a fœtus during nine months is so small that the requisite *daily* increase would be almost imperceptible. Besides, almost all people regularly eat more than the system requires or assimilates, and the surplus is quite enough for the sustenance of the fœtus. Indeed, the common symptom of sickness and vomiting in the morning may reasonably be taken as an evidence that nature is expelling an excess of nourishment already existing, and that less food rather than more should be taken, particularly if the woman experiences a normal action of the general functions of the body. In the late stages of pregnancy, the practice of “eating for two” will be especially liable to induce vomiting, constipation, heartburn and difficulty of labor. Some women, however, who have such delicate constitutions that they take little food when in their usual health, have a normal increase during pregnancy, this condition exerting perhaps a happy influence on

their general health; it is evident that such an increase of appetite, unless it becomes unnatural or voracious, is to be gratified. If a morbid appetite exists for chalk, slate pencils, and other like substances, it must be controlled of course, never gratified.

The general health of the pregnant woman may be favored by a moderate but adequate use of such articles as she can take with comfort, but she should avoid pastry, cakes, salted meats, spices, stimulating drinks, and all things that tend to indigestion, constipation, and an undue accumulation of fat. Plain cooking is always important to health, but more particularly in pregnancy.

Aside from her own health, the prospective mother wishes to do what is best for her unborn babe, and what will mitigate, as far as possible, her pain during labor and lessen the chances of the loss of her child. In point of diet she will be likely to attain these ends in proportion as she "subsists during pregnancy upon aliment which is free from earthy and bony matter; hence the more ripe fruit, acid fruit in particular, and the less of other kinds of food, but particularly of bread or pastry of any kind, is consumed, the less will be the dangers and sufferings of childbirth." The words quoted are found in Dr. Hale's "Diseases of Women," in which he states a principle laid down by an English chemist, a principle whose truth is attested by the experience of many reputable physicians. The fruit diet insures a flexibility in the bones and muscles of both woman and fœtus which is most conducive to ease of delivery and also affords relief from swelling of the limbs, feet and veins, soreness and tenderness of the breasts, and other untoward symptoms which are produced or aggravated by bread, meats and other common articles of food. The more nearly one approaches an exclusive diet of fruits and vegetables the better, though the comfort of the woman is to regulate it in some measure. By various combinations the requisite variety and freedom from disgust for the food can be secured. If laxness of the bowels comes on, as it generally will, especially at first, and is persistent, the diet is not to be abandoned, but mutton broths may be used to regulate it. The pregnant woman who insists on eating ill-advised food simply because she likes it will scarcely fail to pay the penalty in pain and danger in parturition. Meat and bread should be taken very sparingly, and fish will be found the best of all flesh food. To be sure, a substantial change is to be made after labor; the aim of the diet then being to build up the bone and muscle of the mother and the nursing babe, the diet will consist in a great measure of such articles of a wholesome nature as are to be avoided during pregnancy. To assist in selecting the food for both periods, we here incorporate a list made by the chemist alluded to above; those containing a large proportion of phosphate of lime or earthy matter

are on the general principle to be avoided during pregnancy, and used while nursing.

"Beans, rye, oats and barley *have not so much earthy matters* as wheat; potatoes and peas, not more than *half as much*; flesh of fowls and young animals, *one-tenth*; rice, sago, fish, eggs, etc., *still less*; cheese, *one-twentieth*; cabbage, savoy, broccoli, artichokes, coleworts, asparagus, endives, rhubarb, cauliflower, celery, and fresh vegetables generally, *one-fifteenth*; turnips, carrots, onions, radishes, garlic, parsley, spinach, small salad, lettuce, cucumbers, leeks, beet-root, parsnips, mangelwurzel, mushrooms, vegetable marrows, and all kinds of vegetables and flowers average less than *one-fifth*; apples, pears, plums, cherries, strawberries, gooseberries, raspberries, cranberries, blackberries, huckleberries, currants, melons, olives, peaches, apricots, pineapples, nectarines, pomegranates, prunes, raisins, figs, lemons, limes, oranges and grapes, on the average are *two hundred times* less ossifying than bread or anything prepared from wheaten flour. Some articles, as honey, treacle, sugar, butter, oil, vinegar, and alcohol, if unadulterated, are quite free from earthy matters. But still worse than wheaten flour is common salt, and nearly as bad are pepper, cinnamon, nutmeg, cloves, ginger, coffee, cocoa, Turkey rhubarb, licorice, lentils, cinchona or Peruvian bark, cascarilla, sarsaparilla and gentian." The same writer observes that no water except rain and snow, as it falls, is free from earthy matter, and that the only way to make others free from them is by distilling, for filtering, which is only a mechanical expedient, cannot effect this end.

DRESS, EXERCISE AND BATHS.

Dress.—The clothing should be so adjusted that the principal weight will fall upon the shoulders and should be as light as is consistent with warmth, corsets and tight bands about the waist being avoided. Stocking supporters should take the place of the old-fashioned garter or elastic, so as to insure free circulation in the lower extremities, and the modern "combination garment," which consists of chemise, drawers and skirt all together, will be especially comfortable at this time. Particular pains should be taken to keep off pressure from the abdomen, breasts and blood-vessels.

Exercise.—Daily use of the muscles is an important means of maintaining good health during pregnancy. Walking brings into play a greater variety of movements than any other exercise. Summer or winter, walking in the open air is a duty. It is best, if possible, to go out before dinner, having some pleasant object to attain other than simply the exercise. The mind should be pleasantly interested, in order to get the full benefit. Of course, when open-air recreation is impracticable, exercise in well-ventilated rooms is next to be chosen. It should be observed in general that one may

carry the exercise too far. The end to be aimed at is a healthful performance of the regular functions of the body. If the woman has good health, the object sought should be the maintenance of the same. Under the mistaken idea that the acquisition of unusual muscular strength is important, the muscles have sometimes been trained into a rigidity calculated to increase the pangs of labor.

Baths.—The regular morning bath may be continued throughout the period of pregnancy; it may be cold or tepid, sponge or full, whichever has been found by previous habits to best agree. The reader is referred to the remarks on the Sitz Bath, in the chapter on Nursing. The caution is here to be repeated about using baths rashly or indiscriminately. Trial must be the final guide in deciding upon the kind, temperature and frequency, and the reader will do well to read the remarks upon this subject in the chapters on Nursing and Hygiene.

State of the Mind.—All excessive anger, joy, grief or other emotion should be guarded against. Much might be said here about the influence of the mother's mind upon the unborn child. It is of the utmost importance that a tranquil, hopeful spirit be cultivated. Unquestionably many a deformity of the child at birth may be accounted for by impressions received by the mother during pregnancy. We therefore counsel the expectant mother to fortify her constitution by good habits and regimen, that she may escape the nervous conditions which are so susceptible to impressions, and if possible be surrounded with pleasant associations and objects of grace and beauty which tend to peace and cheerfulness.

MEDICAL ADVICE.

When the woman knows that she is pregnant, or has a doubt regarding it for any considerable time, she should consult her physician. The disorders of the period of gestation mentioned below can be materially mitigated by a frequent talk with her medical adviser, and he will give hints aside from the above which apply to her particular case. At and after the fifth month, she should have an analysis made of the urine at intervals of four weeks, to ascertain if it contains albumen; if her physician has skill in this matter he will use means by which albuminuria at parturition may be avoided, and thus one of the most fruitful causes of convulsions and death be removed. The writer insists on this simple caution. See Albuminuria on a subsequent page. A becoming modesty is always commendable, but the inborn delicacy of woman should not bar her from counsel which will tend to allay her apprehensions, and suggest points on habits, diet and general care which will assist her in passing the hour of her trial in safety.

THE PERIOD OF PREGNANCY.

The period from conception to confinement is calculated at ten *lunar* months, forty weeks, or two hundred and eighty days. It is sometimes reckoned at nine *calendar* months, two hundred and seventy-three days, or thirty-nine weeks. Probably forty weeks is the safer reckoning. When the date of conception is known, the reckoning begins from that day. If that be not known, then the calculation must begin from the first day of the last menstrual flow. The subjoined table, prepared by Dr. W. W. Ely, will be convenient for reference.

[illegible]

EXPLANATION.—In the upper row of the required horizontal section, find the date on which the last menstrual flow began; the date immediately below that in the same division marks the two hundred and eightieth day.

DISORDERS OF PREGNANCY.

In the "good time coming" when health is the rule and sickness the exception, a chapter on the disorders of what should be a purely physiological condition will be unnecessary. The Creator could not have intended that pregnancy should be a source of disease, but ignorance, false modesty, fashion, diet, weak constitutions, bad training in girlhood, and the like, lay the foundation for much serious trouble, and thus induce an unfortunate dread of the approach of maternity.

MORNING SICKNESS.

Morning sickness may begin almost immediately after conception, often being the earliest symptom. It generally does not begin until after the lapse of two or three weeks, but then continues more or less constantly and severely for three or four weeks, and in some instances until near the time of quickening, or even until confinement. The causes are increased activity of the nerve force, whereby the equilibrium between digestion and assimilation is greatly disturbed. With those women who have habitually weak digestion this is not much of a symptom. Indeed, they will have better digestion and keener appetites for the reason that the action of the nerve force has been increased, whereas it had previously been deficient. When this annoying sickness is persistent and obstinate, yielding to no remedies, diet or regimen, we may suspect displacement of the womb, possibly ulceration of its neck. The best course to pursue is to consult a physician to make the necessary examination.

TREATMENT.—Arsenicum will relieve vomiting after eating or drinking, and persistent vomiting with extreme weakness and emaciation. Kreosote is suited to many cases and is especially useful if there be a great disturbance of the stomach, indigestion, and severe vomiting. Bromide of camphor, one-tenth grain to a half-grain every one or two hours, is superior for vomiting attended with cold perspiration. Bromide of potassa and bromide of soda allay the reflex irritation which is so often the source of vomiting in pregnancy, and five to ten grains of either may be given one to three times a day; these also act well in some cases when given as an injection into the bowel, twenty to thirty grains being dissolved in a little warm water for such an injection. Pulsatilla is adapted to blondes and those of a lymphatic temperament, and will be useful for bitter taste, belching of the food, nausea induced by eating fat, and general repulsion to food. Nux vomica is applicable to most cases, especially in robust women, particularly if constipation exists; one or two drops of the tincture may be given three or four times

a day, the first dose before rising in the morning. Mercurius may be used for loss of appetite; nausea; desire for acids; yellowish-coated tongue; a bilious condition. The oxalate of cerium is excellent for many cases; the effervescent salts is a superior form for its use, one teaspoonful in a glass of water being used two or three times a day; it may be taken in boiling water before rising in the morning. Phosphoric, sulphuric, nitric and citric acid, much diluted, will relieve sourness of the stomach. Hydrocyanic acid is good for cases of most persistent vomiting; put four drops of the dilute acid in one ounce of water and take a teaspoonful of the mixture every two hours.

Relief may sometimes be obtained by washing the hands and face in cold water and taking a cup of milk, or a little coffee and a biscuit or sandwich, *before raising the head from the pillow in the morning*, the woman remaining in bed about a quarter of an hour after this early meal, then dressing quickly and going out for a walk. The regulation of the diet is also important. A change in the hours of eating to those in which the stomach is least likely to be disordered is advised, especially avoiding excessive meals. Sometimes beef-tea, two or three teaspoonfuls frequently repeated, or soda-water and milk will be beneficial. Small pieces of ice may often be melted in the mouth with gratifying results. Raw beef has been retained on the stomach when every other kind of food has been rejected. It may be scraped or chopped fine, sprinkled with salt and pepper, and spread on bread as a sandwich. Avoid hot biscuits, pastry, "made dishes," stews, half cooked vegetables and the like, and take very little drink during the meal.

PAIN IN THE BREASTS.

A pricking or sharp pain in one or both breasts is not uncommon during pregnancy and is especially liable to occur in those women who have suffered from painful menstruation. Like faceache and headache, it is generally of a neuralgic character, caused by sympathetic irritation which occasions a flow of blood to the organs.

TREATMENT.—Hamamelis and olive oil, one part of the former to two of the latter, rubbed into the breasts will afford relief. Chloroform and glycerine, one part of the former to twenty of the latter, are also useful.

GENERAL CARE OF THE BREASTS.

The last-named disorder may very properly be followed by some counsel as to the care of the breasts during pregnancy. There should be no pressure of corsets or padding. All through pregnancy mild friction of the breasts, with daily use of salt water, is beneficial. If there is a natural

depression of the nipple, it can be greatly modified by the application of a shield after the air has been exhausted; or an empty bottle which has been warmed in hot water will answer the purpose if its mouth is applied immediately to the nipple. This should be done frequently. Persistent efforts in the last months of pregnancy will often effect wonderful results in developing the nipple, and in those whose nipples are so drawn as to form a deep depression the following course will be of much service: Take an ordinary breast-pump and gradually exhaust the air until the nipple is drawn out; let it remain on for some time, rubbing the breast meanwhile with olive oil, often removing the pump; apply Wansbrough's nipple-shields and wear them until the next morning. As soon as it can be done, a piece of ribbon should be tied around the nipple to hold it out after the pump has been removed. An application of calendula jelly, which can be obtained at the drug-store, will tend to prevent soreness and should be used every day; or a mixture of one part of calendula and three parts of olive oil may be used instead. If there be tenderness or cracking, apply either a little powdered borax and brandy, or tincture of myrrh to the nipples.

CONSTIPATION.

Among women who live in towns and lead a sedentary life constipation is a frequent attendant of pregnancy. There are other things besides indolent habits that may give rise to constipation, among which are the pressure of the enlarged womb upon the bowels, and a kind of torpor produced by the diverting of the nerve-force and muscular supply to the womb.

TREATMENT.—Give bryonia for constipation with a flow of blood to the head, and for great irritability of temper. *Nux vomica* is suited to indigestion with a feeling that the rectum is closed; frequent and ineffectual urging to stool; piles; in chronic cases this remedy may be alternated with sulphur, giving the latter in the morning and *nux vomica* in the evening. *Hydrastia* is suitable for mere constipation; *collinsonia* for constipation attended with piles.

An injection of tepid water with a little soap or salt will be of much benefit. It should be given slowly and continued until there is an urgent desire to evacuate. If only a small quantity can be retained, the injection should be repeated after a little time. [The constipation of pregnancy is sometimes so very obstinate that laxatives are required. The two following are the safest: (1) The "Compound Liquorice Powder," a teaspoonful in a half-glassful of water every night or two; (2) The "Elixir Cascara," a dessert, or teaspoonful at night. It is better to use them and cause a movement every day than remain costive.—HALE.]

DIARRHŒA.

If this condition is long continued, there is danger of miscarriage. Diarrhœa may recur every month at the time menstruation would have taken place if the woman were not pregnant. It is caused by nervous irritability, by cold induced by insufficient clothing, or by improper food.

TREATMENT.—The appropriate remedies are given under Diarrhœa in Chapter IV. Use light food, such as milk with lime-water or soda-water. Wear flannel over the abdomen. Avoid night-air and all excesses.

PILES.

This trouble is by no means peculiar to pregnancy, but some women suffer from it at this time and at no other. The chief cause is pressure of the womb upon the blood-vessels in the pelvis, obstructing the circulation. Constipation also has its effect.

TREATMENT.—In severe cases a lotion may be made by adding one ounce of hamamelis to four ounces of water and be applied to the parts with a compress of linen saturated in it. In external piles the protruding part should be pressed back within the sphincter as quickly as possible, the patient lying down and placing a compress wet in hamamelis upon the parts. For internal piles it is better to use injections of hot water than to strain much at stool. A fountain syringe is the best. The diet should be unstimulating, such as ripe fruits, fresh vegetables, bread made from unbolted flour that has had the coarsest of the bran sifted out. Coffee, tea, and alcoholic drinks should not be indulged in. Read the article on Piles in a previous chapter for more detailed directions on treatment.

INCONTINENCE OF URINE.

Frequent desire to urinate is a common symptom of pregnancy, and if not promptly yielded to it results in an involuntary discharge. This is due to pressure of the enlarged womb upon the bladder which makes this a troublesome disorder during the last weeks of pregnancy. The urine is often acrid, dribbles away, and painfully galls the parts.

TREATMENT.—Rest is of the greatest importance. *Nux vomica*, one drop doses of the tincture three or four times a day, is one of the best remedies, especially when the inclination to urinate is accompanied with pains in the neck of the bladder and with constipation. In the later months, when the pressure on the bladder is great, the abdomen being large and overhanging, an abdominal bandage will afford much relief by both removing

the sense of weight and taking much of the pressure from the bladder. See the treatment of this disorder in a previous chapter.

RETENTION OF URINE.

This is a more serious disorder than the one last considered and requires prompt attention. It may arise from pressure on the distended womb, or the womb may be so displaced as to press on the neck of the bladder and thus prevent the discharge of the urine. It may occur at any stage of pregnancy, and should at once receive skilled aid.

TREATMENT.—At the beginning of the difficulty, for coldness and shivering with sudden spasmodic retention, camphor is invaluable; two drops of the tincture may be given on loaf sugar, or camphor pills may be used, the dose being repeated every twenty minutes. Urging desire to urinate, with cutting, tearing pain and distress, will be best treated with cantharis. Ineffectual desire to pass urine, the discharges coming away drop by drop, calls for *nux vomica*.

A towel wet in cold water and applied to the abdomen, alternating it quickly with one wrung out in hot water, will often bring relief. The urine may sometimes be passed, when other measures fail, if the patient will stand on the knees and elbows. If the above remedies and accessories fail and the urine has been retained a considerable time, a catheter should be used by a physician to draw it off. Should no urine be found in the bladder when the catheter is used, the case is very serious, for suppression has taken place, the urine not being secreted by the kidneys as it ought.

SWELLING OF THE LOWER LIMBS.

Swelling of the lower limbs generally makes its appearance within the last three months of pregnancy. It usually begins at the feet and rises higher and higher until it invades the ankle, leg and thigh. It is a kind of dropsy but is not dangerous, usually disappearing almost immediately after the birth of the child. See Albuminuria below. If it is found that the swelling is an attendant or symptom of albuminuria, the case is one of much greater urgency.

TREATMENT.—If the swelling be rapid, extreme, and attended with urinary difficulties, give *apis*. *Arsenicum* is indicated when the swelling is accompanied with much weakness and prostration, and with a feeble, irregular pulse. If the disorder arises from exhausting discharges, as bleeding, diarrhoea, and the like, china will afford relief. Rest is of the highest importance, and in securing it care should be taken to relieve the limbs.

ALBUMINURIA.

When there is a general swelling which is more immediately noticeable in the hands and face, it may be of a more serious nature than the one considered just above, and may be caused by a disorder known as albuminuria. This is a condition in which the albumen of the blood, instead of going to supply the body, finds its way out through the kidneys. Such swellings should lead at once to an examination of the urine to determine whether or not albumen is present. A simple and easy method of making such examinations is given for Bright's Disease under "The Urine," in Chapter II. The presence of albumen in the urine of pregnant women will be indicated by the substance resembling white of egg, as described in the place cited. Such a test should be repeatedly made when any swellings exist like those named, and it is best that the question of the existence of albuminuria be not left with inexperienced persons. Indeed, it is a wise precaution to use this test at different times during pregnancy, whether the disorder under discussion is suspected or not. The violent and fatal convulsions in child-bed are occasioned by albuminuria, which is induced by a condition of the kidneys that obstructs the circulation of the blood, causing a retention of urea in the blood, and thus producing what is known as uræmic poisoning. This condition exists, to a greater or less extent, oftener than is supposed by most people, including physicians; hence the urgency of frequent tests to decide about its existence. It can be corrected by a skillful physician. Dropsy is also sometimes associated with albuminuria, and its appearance demands immediate and competent medical aid.

FALSE WATERS.

Discharges of "false waters" differ from those of threatened abortion in that they are free from the pains which characterize the latter. The color of false waters is a little yellow, sometimes tinged with blood, and large quantities may be discharged. The disorder is probably due to a superabundance of fluid within the membranes surrounding the fœtus.

TREATMENT.—Insure perfect rest during the discharge. If the flow excites pain, retain in the rectum an injection composed of fifteen to twenty drops of laudanum and a tablespoonful of starch-water.

CRAMPS.

Pregnant women are subject to cramps or irregular pains in the abdomen, loins, calves of the legs, and the feet, especially about the fourth and fifth months, and toward the termination of pregnancy.

TREATMENT.—Few cases will fail to yield at once to the use of *nux vomica*, and this should be given upon the appearance of cramps, especially if constipation exists; a drop of the tincture may be given two or three times a day. Apply brisk friction to the legs and keep them dry and warm. During the cramps, clasp the limbs firmly with both hands and thus cut short the distress. See Cramps of the Muscles, Chapter XI.

COLIC.

Spasmodic colic is quite frequent during pregnancy, is due to flatulence or gas in the bowels, and is often a distressing ailment.

TREATMENT.—Since its primary origin is generally in the diet, care should be taken to avoid such articles as are found to provoke it. Immediate relief is often obtained by warm applications to the abdomen and an injection of hot water into the bowels. Give *chamomilla* for colic associated with relaxation of the bowels; tearing pains about the navel; impatience and irritability. *Colocynth* is suited to paroxysmal colic attended with cutting, griping, or intermittent pains; diarrhœa; severe as well as mild forms of the disease. *Nux vomica* is invaluable for spasmodic flatulent colic, and for constipation alternating with diarrhœa. Give *veratrum album* for severe crampy pains, with or without diarrhœa, if accompanied with the vomiting of bilious matter; it has been preceded by *hyoscyamus* with advantage.

ITCHING OF THE GENITALS.—PRURITIS.

This is a very distressing trouble, sometimes occurring without any appreciable cause, and may be of an alarming nature. It is generally produced by discharges from the vagina having acrid or corroding properties.

The annoyance caused by it is sometimes so great as to arouse extreme and painful nervous excitement.

TREATMENT.—Frequent washing of the parts with water and castile soap will often correct the disorder. If this is not sufficient, a wash of borax may be used, or an injection of ammoniated water, two teaspoonfuls of the aromatic spirits of ammonia in a glass of water. Benzoic acid, ten to twenty grains in a half-pint of water, is also a good application; while dilute carbolic acid, tincture of iron, infusion of hops, and flower of sulphur, have all proved efficacious. A superior preparation is made of subnitrate of bismuth and olive oil, one drachm of the former to two ounces of the latter. Still another is made of ten grains of sulphate of zinc, five grains of pulverized tannin and a tablespoonful of honey, well mixed, and then stirred into a pint of boiling water; it can be kept bottled.

FAINTING.

This is not of unusual occurrence among women during the first month of pregnancy, even before the suppression of the menses. At the period of quickening it is quite common, owing no doubt to a sympathetic nervous irritation from the movements of the child. It is generally a disorder that should cause no alarm unless it is connected with heart-disease.

TREATMENT.—The first thing to be done is to lay the woman flat on the bed with the head on a level with the body; loose the clothing; admit plenty of air; sprinkle cold water on the face; apply to the nostrils salts of ammonia, camphor, cologne, or vinegar. For continued fainting fits give camphor, one drop of the spirits in a little water every ten minutes, and then send for a physician. See Fainting in a previous chapter.

VARICOSE VEINS.

A swelling of the veins is a frequent accompaniment of pregnancy, especially in the lower limbs. The veins of the thigh and those below the knee are liable to be involved. Sometimes the foot becomes quite purple, and the veins in the legs and thighs acquire an enormous size. The cause is the pressure of the enlarged womb upon the blood-vessels, which obstructs the return of blood from the parts below. It is most frequent in those who have borne many children.

TREATMENT.—The limb should be bandaged from the toes up. Beneath the bandage compresses of linen should be laid over the enlarged veins and kept wet with hamamelis. Rest in the recumbent posture is of much importance and readily affords relief. Sometimes an elastic stocking is necessary, and should be drawn on *before rising* in the morning.

ABORTION.—MISCARRIAGE.

Abortion must be regarded as a serious evil. It not only deprives the mother of the product of her pregnancy, but often places her health and even life in peril. The general condition of the prospective mother necessarily exerts a great influence in this disorder. Fleishy women subject to profuse menstruation, very impressible, nervous women easily excited by passion or mental disturbances, and those who indulge immoderately in the pleasures of society, dancing, late hours and tight lacing, are liable to the misfortune. Such as are occupied at the sewing machine are constantly exposed to this mishap. Some diseases are predisposing causes, as when the mother transmits some acute disease to the fœtus, such as small-pox or yel-

low fever. A sudden leap from a carriage, reaching up and straining, excessive fatigue, too frequent coition, violent fits of anger and other passions, are causes. Miscarriages happen oftener at the third month of pregnancy. The return of what would have been a menstrual period had the woman not been pregnant is the most frequent time for their occurrence.

TREATMENT.—In the treatment of this trouble much depends on the patient and the care she may exercise. The following rules will often prevent the loss of the fœtus, as well as the danger to the mother. At the first indication of disturbance, as pain or discharges from the womb of any kind, the patient should immediately go to bed and lie there quietly. All exciting influences should be removed. The feet must be kept warm. A physician should be summoned at once, though the indications of abortion be very slight, and his orders be strictly followed, even if they require a seemingly well woman to remain in bed for days or weeks. If there has been a considerable discharge of blood or if the pain has been severe and long-continued, these means with proper medical treatment will often prevent abortion in apparently hopeless cases. Some women are predisposed to abortion and this predisposition is increased at each successive mishap of that kind. Such should take preventive treatment under the direction of some one skilled in these cases. To those who cannot obtain this help the following remedies will be found of value.

Viburnum prunifolium exerts great influence over the reproductive organs and will often quiet an irritable uterus at once. It is indicated by spasmodic uterine pains, and when these appear it should be taken in five to ten drop doses of the tincture every one or two hours until relieved. This remedy may be used by those who are predisposed to miscarriage, so as to remove the primary causes; in which case the dose should be two drops of the tincture three times a day, so continued during the second and third months of pregnancy. *Caulophyllum* also relieves spasmodic pains and may be alternated with or follow the *viburnum*, twenty drops of tincture being put into three ounces of water and a teaspoonful of this dilution being taken every one or two hours. *Ergot* in one, two or three drop doses every hour will arrest the hemorrhage and quiet the pain. *Opium* in some form is often necessary if the pain is severe and protracted; put one teaspoonful of the deodorized tincture in four ounces of water and take one teaspoonful of the dilution every half to one hour until relieved of the pain.

PARTURITION AND ITS CONSEQUENCES.

In spite of her fond anticipations of maternity, the wife knows that she is not to attain to it without some trial and pain, for the physiological

consequence of pregnancy in the present order of social life is indeed one of "labor." Without giving a useless discussion upon the causes which have made this natural function one of pain and sometimes peril, or even drawing a contrast with the Indian mother of the forest who is scarcely interrupted in her regular duties by bringing forth a child, as an evidence of what is the privilege of other women, we drop a remark or two which apply to civilization as it is, and will be gratefully received by the expectant mother. Though much suffering attends the bearing of children, and though deaths do occasionally occur during and after the labors of child-birth, the dangers of a fatal issue are greatly exaggerated by the non-professional public. Notwithstanding foolish and hurtful fashions and the most absurdly imprudent habits of many women during pregnancy, experience and statistics show that the actual peril to life is so slight, as compared with the popular belief, that it ought to occasion little or no anxiety to the one who is approaching the consummation of maternity. By reasonable caution during gestation, as to particulars mentioned above, the danger to life may be reduced far below what it is in the other more common forms of confining diseases, and even the pain of labor may be very largely avoided. There is an impression that the first confinement is more dangerous than subsequent ones. While it is usually more protracted, it is not more hazardous.

PREPARATIONS FOR CONFINEMENT.

The woman who is approaching her first confinement is especially in need of a little instruction upon the proper preparations, and we give the principal particulars in a few words.

The Mother's Outfit.—Three medium-weight flannel vests; six dressing-sacks, used in place of night-gowns; three bandages a yard and a half long and twelve inches wide, made of white dress-drilling; three Canton flannel skirts with a shirr at the top; two dozen linen napkins.

Child's Outfit.—Two yards of finest all-wool white flannel for bands—tear them off as they are needed, in width to suit the size of the child, and use without hem or seam; three lamb's-wool hand-knit shirts with long sleeves—to be used until after the period of teething, thus necessitating the purchase or making of new ones as the child grows; twenty-four diapers; four flannel pinning-blankets; three flannel skirts; three pairs of knit woolen socks; two flannel or merino blankets one yard wide; six night-slips; one box with puff, corn starch being suitable for use. Though the pinning-blankets are usually made with muslin bodies, it is better to tear off a piece of flannel of sufficient size to make both skirt and waist, and then draw one end together in box-plaits so as to fit the body.

Baby Basket.—The following should be all in readiness before labor begins: Pieces of old soft linen or absorbent cotton for dressing the navel; a cake of white castile soap; a fine sponge; a bottle of sweet oil; a paper of large safety pins and a paper of small ones; a pair of round-pointed, sharp scissors; complete suit of baby's clothes.

Articles Needed During Labor.—Pure vaseline or sweet oil for the soft parts of the mother and the hands of the physician, nurse or attendant; a cord made of four linen threads twisted together, to be used in tying the umbilical cord; a square yard of flannel to envelop the new born babe; a supply of warm water, towels and napkins; a fine sponge; a vessel to receive the after-birth; it is highly desirable to have ice at hand.

NOTES ON THE LYING-IN CHAMBER.

The Room.—The room should, in general, be as described in the chapter devoted to Home Nursing, as to points of ventilation, furniture, bed, and many other particulars. In case of prolonged or difficult labor there is some danger that the temperature will be too high and induce fever, irregular and ineffective pains and fatigue, thus protracting the labor.

The Bed.—Before the second stage of labor (see Labor below) the bed should be prepared. It may be arranged as usual, with the addition of a thick blanket or quilt underneath the lower sheet, covered by a sheet of rubber, oil-silk, or table oil-cloth. By this arrangement all the soiled bedding can be removed after the birth of the child, the lower sheet, which has been previously folded back, can be drawn down into place, and the bed be as fresh as before labor.

The Dress of the Mother.—This should be so arranged that it will not be soiled. The chemise should be folded up around the waist, so that it can be easily pulled down after labor has passed, and the bandage which is to be used after delivery be pinned around the body. Below this may be a flannel skirt to protect the person and be readily removed without lifting the patient after labor. A short white sacque in the place of the customary long night-dress will be convenient and out of the way. The whole clothing should be as light as possible. Of course no corset will be worn, but instead of it a broad double calico bandage with rows of tape arranged on each side, so that it may be tightened as labor advances, and be afterward used for the common bandage or binder.

Labor.—The expectant mother will experience unmistakable symptoms of her approaching confinement during the last months of pregnancy, some time before she need pay attention to some of the above particulars. One of the first of these is the sense of decrease in the weight of the abdo-

men, which is caused by the descent of the womb into the pelvis. This change of position takes place about two weeks before confinement. The waist becomes sensibly smaller, and the lungs, heart and stomach are relieved from the pressure; the woman feels more buoyant and comfortable, breathes more freely, and can exercise with less discomfort.

The *first stage* of labor is the process of dilatation of the mouth of the uterus. There is a discharge of watery blood, known in common parlance as the "show;" intermittent and regular pains, ushered in by shiverings; frequent desire to empty the bladder and the bowels; oftentimes nausea and vomiting. During this stage, it is better to walk the room or sit in a chair, which is less tiresome than to be confined to the bed. There is nothing now to do but to wait until the womb is sufficiently dilated. It is worse than useless to "bear down" at this time, for it does no good and wastes the strength. It is well to thoroughly evacuate the bowels by using an injection of warm water and soap. The *second stage* is indicated by the bearing-down and forcing nature of the pains, which come with great regularity and continue until the birth of the child. The voluntary expulsive efforts should only be made during the pains; between them it is better to rest. The *third stage* is the expulsion of the placenta, or after-birth. This generally takes place in from fifteen to thirty minutes after the birth.

As a rule, labor should not be interfered with, but when there are malformations and tedious labors the skilled physician brings his instruments and medicines to the relief of the sufferer. Sometimes a physician is not at hand, the pains are ineffectual, labor is tedious, and some help at the hands of the non-professional is necessary. If there be indications that the mouth of the womb is rigid and hard, one or two drop doses of the tincture of gelseminum will be found useful. Caulophyllum will stimulate the womb to expulsive efforts, five to ten drops of the tincture being the dose. If the pains are long-continued, aggravating, and with little effect on the labor, good results are obtained by inducing complete rest for a few hours by an opiate, for which purpose ten to twenty drops of the tincture of opium may be used.

General Remarks.—If the labor is much protracted, the patient should be encouraged to sleep; should have tea, dry toast, soup, light pudding, and the like, if she wishes them; should evacuate the bladder and bowels at reasonable intervals, the latter sometimes requiring an injection. If shivering arises, give warm tea, or gruel without stimulants. Vomiting is rather favorable than otherwise, though bits of ice may be melted on the tongue or swallowed if the vomiting is very long-continued, or attended with much heat and nausea at the stomach.

The New-Born Babe.—When the child is born, the nurse or attendant

should move it out of the way of the discharges of the mother, on the right side, so that it can have a chance to breathe. If it is strong and healthy, its first appearance will be attended with a vigorous cry, which will fill the lungs, start breathing, and establish pulmonary circulation. It is therefore necessary to examine the mouth and throat at once and remove all mucus. After the pulsations have ceased in the umbilical or navel cord the latter should be *firmly* tied with the linen cord mentioned above, about two inches from the body of the child. Another ligature should be applied two or three inches further from the body, and the cord be then cut between the two ligatures, sharp scissors with blunt points being used. The end of the umbilical cord next to the child should be carefully examined to see that bleeding does not continue.

After the breathing is established and the cord has been properly secured, the child should be wrapped in a soft, well-warmed blanket and be allowed to rest before it is washed and dressed, the temperature of the room in which it lies not being below 80° F. When the child is to be dressed, the layer of greasy, tenacious matter which covers the body can best be removed by spreading oil or lard over the whole surface and then gently rubbing it off with a piece of flannel cloth. By avoiding soap and water in this dressing the danger of a chill is removed, while the oil or lard will more thoroughly cleanse the skin.

To dress the navel, take a piece of antiseptic cotton or old soft linen, about four inches square, make a hole in the center, and draw through it the stump of the cord, spreading the cloth smoothly on the abdomen. Then wrap the stump of the cord in another piece of the cotton or linen and lay it upward toward the chest. Put upon this a double layer of flannel and secure the whole in place with a band about four inches wide, gently fastened around the body. In five or six days this remnant of the cord will come off. Care should be taken when washing not to disturb the dressing. It not unfrequently happens that the navel, during the process of healing after the separation of the cord, becomes very much inflamed, the inflammation spreading considerably around it, and ulceration setting in if it is not properly treated. For this condition, dip folds of lint into calendula water and apply it to the parts, using ten drops of the tincture of calendula to two tablespoonfuls of water.

Still-Born Infants.—An apparently dead child may sometimes be resuscitated by prompt and well-directed efforts, if the heart has not entirely ceased to beat. These efforts should be made before the navel string is tied. The mucus in the mouth and the throat should be carefully wiped away and the mother be directed to breathe deeply several times. If this is not sufficient to promote breathing in the child, give several smart blows

on the back and buttocks; sprinkle a little cold water in the face. If this is unsuccessful, tie and cut the cord after the pulsations in it have ceased, and put the child into a warm bath, at a temperature of 96° to 100° F. If this fails, apply with gentleness, but with patience and long persistence, the means for "Artificial Breathing" mentioned under Drowning.

The Mother.—When the placenta, or afterbirth, has been removed from the mother, *which should never be interfered with by any one who is not experienced*, it is well to apply a bandage around the abdomen, the broad calico bandage previously mentioned being suitable. This should be fastened by safety pins or by the tapes if the bandage alluded to be used. Before this bandage is put on, the nurse or other attendant can greatly assist the womb in contracting by placing the hand on the abdomen and grasping the womb, which may be felt as a hard ball under the hand. This will also tend to prevent or check bleeding. After the soft parts have been cleansed with a sponge and warm water, a cloth wet in a solution of arnica, one teaspoonful of the tincture to a teacupful of warm water, may be laid upon them. The room may now be darkened and everything be quiet, that tired nature may be refreshed by a little sleep, though the babe, previously dressed, is to be first put to the breast.

FLOODING.

After delivery the most frequent source of danger to the mother is in flooding, or bleeding. This generally comes with a rush after the child is born. Sometimes all is well for several hours, and then the bleeding sets in. Occasionally there is no appearance of unusual flow externally, but the small pulse, pallor of the face and dimness of vision indicate internal hemorrhage, that is, in the cavity of the womb, from which the blood only escapes into the vagina and forms large clots there.

TREATMENT.—Under such conditions the woman's head should be lowered and the hips be a little elevated. An injection of ice-cold water will often be effectual; at the same time some pieces of ice may be swallowed. A treatment quite the reverse of this is popular and efficacious at the present time, and consists in using hot-water injections, temperature 95° to 100°, and applying rubber bags filled with hot water to the spine. Place the child to the breast. The object of these various means is to promote contraction of the womb. Nothing is simpler or perhaps better than dipping the hand in cold water, placing it on the abdomen, and grasping the womb to stimulate it to contract. The remedies to be given are ergot, hamamelis, caulophyllum, and ipecac, in frequent doses, a rational alternation of any two generally being best. If neither of these remedies

is at hand, administer a tea prepared by pouring hot water on cinnamon or spices. If the patient has lost much blood, she may be stimulated with a little brandy and the extract of beef. Insure absolute rest.

AFTER-PAINS.

In their first confinement women do not often suffer from after-pains, but each succeeding one brings an increase of the same.

TREATMENT.—Since these pains result in the contraction of the womb and are therefore salutary, they should generally not be interfered with. If they are extremely severe, *cimicifuga* may be given every hour in doses of five to ten drops, or *viburnum* in doses of ten drops every hour. If they still continue, and each pain is followed by a discharge of clots and increased flow, *ergot* may be given in five-drop doses. Opium is sometimes needed, and ten to twenty drops of the tincture, or a Dover's powder, will induce sleep and allay the severity of the pain and restlessness.

THE LOCHIA.

This is the natural discharge that follows child-birth, and is variable in quantity and quality. During the first week it is of a red color and more abundant. It gradually becomes lighter, and may be yellowish, greenish or whitish, with a peculiar odor. Much of the disagreeable odor is due to a neglect of proper cleanliness.

TREATMENT.—After confinement wash the parts with warm water at least every night and morning, then thoroughly dry them immediately. Change the napkins often and carefully remove all clots from the vagina. The removal of clots is aided by allowing the patient to sit upright the first time that she passes urine after delivery, and later if it is found that the clots have formed again. All possible pains should be taken to keep the bed, bedding, and clothes fresh and sweet, and the room well ventilated.

DIET AFTER DELIVERY.

A nourishing, easily-digested diet, including solid food, is needed after the first day to keep up the strength and avoid inflammation. Those fruits, vegetables, and other articles which so freely generate gas as to cause inconvenience should be avoided, or taken sparingly. Mutton chop, stale bread with butter, milk, tea, beef-steak, oatmeal porridge, and the like, will agree well. For fuller remarks upon this subject, see under "Habits During Pregnancy" on a previous page of this chapter.

RETENTION OF URINE.

TREATMENT.—After a severe and tedious labor retention of urine is not uncommon. If no urine is passed within eight or ten hours after delivery, apply to the bladder and loins a cloth wrung out in hot water. This will generally be followed by a free flow of urine. If the patient will stand on her knees and elbows, the urine may be passed in this posture when other expedients fail. If these measures do not effect the desired results, the urine is to be drawn off with a catheter in skillful hands.

CONSTIPATION.

The old-fashioned practice of giving castor oil and aperient pills just after confinement is wrong and tends to do harm. It is natural that the bowels remain unmoved for a few days after delivery, and this condition may be considered an evidence that the patient is properly gaining strength.

TREATMENT.—After four or five days, if there has been no evacuation, an injection into the bowel of warm water should be given, whether there is an inclination to stool or not. This will effect the desired result without impairing the health of the patient. Two or three ounces of sweet oil may be injected into the bowel two or three hours before the warm-water injection. *Nux vomica* and sulphur in alternation will generally remove any further tendency to constipation, though the syringe should be used if the circumstances call for it, as indicated by renewed constipation.

DIARRHŒA.

Looseness of the bowels after labor is an unfavorable condition and should be promptly treated, especially if it occurs during the season of the year when dysentery and cholera morbus prevail.

TREATMENT.—Arsenicum is needed if the disorder be marked by vomiting after eating, great thirst with little water taken at a time, weakness and rapid exhaustion, and dark, watery discharges which are worse at night. Great debility from loss of blood, yellowish, watery discharges and a marked inclination to sweat, show a state which calls for china. *Pulsatilla* is to be given if the diarrhœa is caused by eating too rich food. *Mercurius* is needed if the diarrhœa is attended with bitter, bilious vomiting.

PUERPERAL FEVER.

This disease, commonly known as child-bed fever, is of so grave a character that it cannot be expected that a non-professional person would under-

take its treatment, but it may be necessary to know what to do until the arrival of a physician. It is a continued fever occurring at child-birth that is caused by decomposing fragments of retained placenta, instrumental or difficult labors, fetid lochia, sudden suppression of the lochial discharge from taking cold, neglect of cleanliness, emotional disturbances, contagion, or transmission of the poison from one patient to another by the clothing of the physician or nurse. The symptoms of puerperal fever are slight shivering fits, followed by an increase of temperature; more rapid pulse; short respiration; great thirst; sometimes nausea and vomiting; much tenderness over the region of the womb; decrease in or loss of the milk; scanty urine; diarrhœa; the patient lies on the back, with her knees drawn up to relieve the abdomen and prevent the bed-clothing from pressing too heavily; abdomen bloated and tympanitic.

TREATMENT.—Though it is imperative that a physician be in attendance if possible, some directions are in place here as being applicable when one cannot be secured. When the first indications of fever are noticed, aconite should be given. If relief does not promptly attend the use of aconite, follow with baptisia, particularly if the symptoms become more decided. Belladonna is clearly indicated by flushed face, severe headache, great restlessness, and mental distress bordering on delirium; it may be alternated with aconite or baptisia. Gelseminum will be useful if there be alternate chills and fever, thirst, hot, drenching sweats during the chill or fever, double vision, and pain in the back of the head and neck. Turpentine will relieve if there be red, dry tongue, bloated abdomen and diarrhœa. The last remedy may also be used locally in the form of hot fomentations; put a tablespoonful of turpentine in one pint of hot water, wring out cloths in this, and apply them as hot as they can be borne to the abdomen, covering all with oil-silk and dry flannel cloths.

To relieve thirst and promote perspiration, frequent small draughts of cold water should be given. Milk, strong beef-tea, and brandy in small quantities will aid in keeping up the strength. Perfect rest and quiet, with an absence of every appearance of excitement or alarm on the part of attendants, are absolutely necessary. If there is much distension or tenderness of the abdomen, a bag full of dry bran may be well heated and applied, unless the patient complains of the weight. The vagina should be thoroughly cleansed three or four times a day with a solution of chlorate or permanganate of potash, made by putting fifteen grains of the chlorate or five grains of the permanganate in an ounce of warm water. If the discharges are offensive, the napkins should be changed the oftener and the parts be the more frequently cleansed with the lotion just mentioned. Every one should take strict precautions against the approach of this malady.

INFLAMMATION OF THE BREASTS.—MAMMARY ABSCCESS.

This affection is one of the most annoying and painful diseases of the nursing mother. It not only occasions great distress, but by the extended inflammation and subsequent suppuration the function of the gland may be destroyed and the child be deprived of its natural nourishment. It is generally supposed that this disorder is the result of a cold, and oftentimes the means taken to prevent such a result are the cause of the difficulty, developing an existing predisposition into a real attack of the inflammation. This predisposition often lies in some depraved state of the system, or has its origin in an imperfect reaction after labor. Many times the breasts are large and flabby, and the added weight of cloths applied to keep them warm brings such a strain on the attachments of the gland as to interfere with its function, some of the ducts are obstructed, and inflammation follows. Again, repeated attacks of inflammation extending for months, accompanied by chills and fever, are ascribed to malarial influences when the real trouble lies in an imperfect action of the gland due to a faulty state of the system. These things should be well understood by the general reader, and careful observance of the following rules and facts will save much suffering and trouble.

(1) One of the conditions necessary to healthy breasts is a well formed and fully developed nipple, that the child may be able to get a good hold and thus draw out the milk. Oftentimes from improper dressing or from malformation the nipple is drawn in or is imperfect, and if not attended to in time is a fruitful source of inflammation of the breasts. For remarks upon this and other abnormal conditions, refer to the article on the general care of the breasts.

(2) A bad state of health during pregnancy and a low condition of the system at confinement from deficient quality of the blood tend to an imperfect action of the breast and consequent inflammation.

(3) Often there is a disorganized condition of the breast from birth which renders the gland incapable of performing its function. This is sometimes due to the pernicious practice which some nurses have of pinching the breast immediately after birth, and which is fully noticed under the care of breasts of infants.

This disorder consists in an erysipelatous inflammation and swelling of the breasts. It usually comes on with a chill followed by fever and more or less hardness and pain. As the inflammation extends the skin takes on a purplish hue, the secretion of milk is suppressed, and finally suppuration takes place in one or more parts, burrowing its way to the surface where it

may discharge through several openings. When very extensive, it results in loss of the gland. This extreme course, however, is not always followed; in fact, comparatively few cases terminate in this manner when early and proper treatment is observed.

TREATMENT.—Much can be done to prevent inflammation, and a little timely attention may save weeks of suffering and danger. If the cause be the irritation arising from the weight of clothes or cloths, and there be pain and tenderness, with some swelling extending to the armpit, supporting straps should be applied. These consist of two straps of adhesive plaster two inches wide, applied to the lower side of the breast and drawn smoothly up on either side, extending upon the shoulder and entirely supporting the breast. This will usually be followed by a cessation of the pain.

If the breasts are hard, and gentle and persistent rubbing with warm sweet oil and hamamelis does not give relief and soften them, the milk should be all drawn out and a plaster-cap be firmly applied. Cut a piece of adhesive plaster in a circular form large enough to cover the breast; cut a hole in the center that will allow the nipple to pass through; divide the plaster into four or more flaps by cutting slits from the outside nearly to the hole in the center. Warm the plaster by means of a hot plate; attach a flap to the lower side and draw its corresponding flap firmly up; so continue until it is all smoothly and firmly applied. The supporting straps may then be put on. This will usually be followed by the subsidence of pain and inflammation, and the breasts will become soft and the milk return. The breasts should be kept warm but not burdened by heavy flannels or other cloths. The best protection is a layer of cotton batting covering the whole breast, and those of a low state of the system may nurse the child through an opening for the nipple, not uncovering the breast at the time.

Should these preventive means all fail and the formation of an abscess follow from malformation or other causes, such means as will hasten suppuration and lessen the pain should be used. Warm fomentations should be put on freely, and when the abscess permits or shows at which part the suppuration will take place, adhesive straps should be applied over the breast, except the part where suppuration exists, in such a manner as to force the matter to the surface, the part exposed being in the meantime covered with hot fomentations or lotions. The lotions may consist of lobelia tincture, extract of hamamelis, tincture of phytolacca (poke root), or hot water. A very good application may be made with one part tincture phytolacca and eight parts of olive oil; rub the breast thoroughly and apply with a layer of absorbent cotton. Poultices of flax-seed meal, pulverized elm-bark, bread and milk, or poppy leaves, may be found of use, and when suppuration takes place the opportunity to use all of them may arise.

Aconite internally will be found useful if there be high fever, chills, hard, bounding pulse and thirst. Mercurius will often prevent suppuration if given early, and may be considered especially indicated if the tongue has a thick white coating, and is large and flabby. Gelseminum is useful for alternate chills and heat, and for hot, sweating fever coming on in the after part of the day. Phytolacca acts well when a mammary abscess is threatened. Give belladonna for dark-red swelling of the breast; great pain in the head; flushed face; throbbing, beating, stinging pain in the breast. Hepar sulphuris is suitable for preventing suppuration and hastening the termination of the abscess when forming.

Since mammary abscess is dependent for its formation on a depraved state of the system, in its prevention or cure the general tone of the health should be the first consideration. Such means and care as will tend to invigorate the constitution and such diet as will build up a good supply of rich blood will tend to bring about the desired result in the general health.

CRACKING AND ULCERATION OF THE NIPPLES.

This trouble, like mammary abscess, is largely dependent on the condition of the system at child-birth, and many times the failure to cure is due to a depraved state. However efficient the local means used for its relief, attention must be given to the constitutional trouble in order to have success. It usually comes on immediately after the child commences to nurse, and is generally noticed at the base of the nipple in the form of a crack, or on the end as an ulceration. It is extremely painful and sometimes prevents the nursing of the child; this may be obviated, however, by nursing the child through a nipple-shield until the sore is healed. The duration depends on the constitutional disorder which is at the foundation of the trouble, as repeated outbreaks will occur until this is removed. Some cases may arise from mal-formation of the nipple, too small ducts for example.

TREATMENT.—The same course should be taken to build up the general health as has been recommended for mammary abscess. The breasts should be soft and pliable and free from any hardness, lumps, or other conditions which prevent the free flow of milk. After the child has nursed, the nipple should be bathed with tepid water and dried well; after which apply the following lotion:

Glycerine, pure,	1 ounce.
Tannic acid,	$\frac{1}{2}$ drachm.
Tincture calendula,	1 drachm.

Mix.

Apply with a pledget of absorbent cotton or lint. Remove this and

wash the nipple before nursing. Much good can be accomplished by wearing Wansbrough's metal shields, which may be applied immediately after nursing. Chamomilla internally will often relieve the redness and irritation. If chapping or cracking takes place, give graphites every four hours. If the cracks deepen and are not relieved by graphites, then give sulphur three or four times a day.

The mother should persist in keeping up the flow of milk by applying the babe to the breast, though when the nipple is very sore it should be nursed only once in five or six hours until relief from this affection is obtained, with the assurance that as the strength and general health improve, the cure of the nipple is certain, even if it sometimes be slow.



SECTION II.

THE BABE: ITS CARE AND TREATMENT.

TABLES of mortality present a pitiable spectacle of deaths among infants and young children. Of ten thousand human beings born about one-third die before the fifth year, nearly one-half of this number coming into the world lifeless or dying on the birth-bed. Even after the crisis of the first day has passed, a distressingly large number pass away before reaching the age of one year, and three-fourths as many die before the second year closes. The first year is a critical one and the babe who passes it in health will be fortified against many of the ills which subsequently ensue. The object of this chapter is to fill a great and conspicuous gap, left open by books of this character, by telling the young mother what general care and treatment she should bestow on her babe during the days when she knows that it often suffers without being able to make known its pains and wants in an intelligible way. It is a pleasure to acknowledge as the source of a great part of the suggestions a little work entitled "What Every Mother Ought to Know," by Dr. Ellis, whose wide experience in the treatment of children is a sufficient guarantee of the value of what is offered.

The diseases which are incident to the first few days of the child's life will be first considered, since their treatment more properly comes in close connection with that of such disorders as afflict the mother. Other diseases of childhood are treated in the earlier chapters of this book.

PROTRUSION OF THE NAVEL.

Carelessness, bad dressing of the navel, and sometimes a natural weakness of the muscles of the abdomen cause the navel to protrude. This condition ought not to be neglected.

TREATMENT.—The navel should be gently worked back into place with the fingers and be held in place with a little pad made of a coin, convex button, or other body of like shape and weight, covered with several thicknesses of cotton, the whole being secured by a band passed around the body.

CRYING AND RESTLESSNESS.

Infants often cry and are restless and sleepless without any apparent cause. Nervous irritability from atmospheric changes and deranged digestion are among the most common causes.

TREATMENT.—If any treatment is undertaken, avoid all stock “soothing syrups” and cordials which annually kill so many children. (See other remarks on this topic on page 357 and in the following pages of this section.) A few drops of chamomilla will usually relieve all the trouble; it may be alternated with aconite if fever be present. The fault is often in the clothing, and their removal followed by gentle rubbing of the body will many times afford the desired relief.

INFLAMMATION OF THE EYES.

Too sudden exposure to light, contact with the discharges of the mother at birth, uncleanness and a scrofulous constitution are often the causes of this malady. The mucous membrane lining the lids, together with the glands within their edges, are the diseased parts, showing redness, agglutination of the lids, great sensitiveness to light, and a profuse discharge of thick, yellow pus.

TREATMENT.—Keep the eyes clean by washing them often with a fine sponge and tepid water. Use a camel’s-hair pencil to clean under the lids. A solution of ten drops of fluid hydrastia in an ounce of warm water may be rubbed on the eyes once or twice a day, and cloths wet in the same may be laid on if there is much inflammation. Many times the mother’s milk is all that is needed, a few drops being put in the eyes at each nursing. Cold tea and milk are good for lessening the heat and inflammation.

“SNUFFLES.”—OBSTRUCTION OF THE NOSE.

Nurses would call a slight catarrh by the truly suggestive name “snuffles.” Whatever be the name, the condition often seriously interferes with breathing and suckling, and is besides a common cause of deafness.

TREATMENT.—Much relief will be afforded by smearing the inside of the nostrils with plain cosmoline or goose oil, applied with a camel’s-hair brush or a very soft feather. Promote the general health.

VOMITING.

Some infants vomit very easily, and generally after each feeding, probably because they have taken more than the stomach can digest; or

the quality of the milk may not be suited to the stomach particularly if it is cheesy, and there is acidity of the stomach. Tossing the child up and down may cause vomiting. Sudden emotions of the mother before nursing may also produce it. It is the precursor of many and indeed of most infantile diseases.

TREATMENT.—Simple vomiting from overloading the stomach will be corrected by ipecac. If the vomiting is attended with diarrhœa, pulsatilla will be efficacious. Avoid the causes mentioned above.

COLIC.

Colic and flatulency are always symptoms of deranged digestion. The cry caused by colic is of a spasmodic nature and is accompanied by a drawing up of the legs. There is also a rumbling noise in the bowels which indicates the presence of gas. The attacks may be so violent as to cause spasms. Many times there is a greenish diarrhœa.

TREATMENT.—Chamomilla is suited to flatulence accompanied by greenish diarrhœa. Nux vomica is needed when the colic is attended with constipation. When the babe has griping pains which cause it to scream, give colocynth. Be sure that the milk of the mother's breast is suited to the babe. Imprudence of the mother, leading to a bad condition of the milk, is a fruitful cause of vomiting and colic.

CHAFING.—EXCORIATIONS.

When excoriations occur between the buttocks, in the groin, or in the armpits, they are generally due to negligence of requisite cleanliness, for the proper attention to these parts will avoid such a trouble. The removal of the cause is usually sufficient to effect a cure; but if there be much inflammation, the parts may be bathed in a solution of borax, twenty grains to an ounce of water, and cloths wet in the same may be spread upon them. [Boracic acid ten grains and vaseline one ounce make the best preparation.—HALE.]

THE BREASTS.

Soon after birth infants often have hard, swollen breasts, which many erroneously suppose contain milk. Do not squeeze them, or you may induce serious troubles and even life-long deformity, especially in female infants. Apply warm camphorated oil. If there be much pain and inflammation, applications of one part of extract of hamamelis to two of warm water will afford great relief. [Or tincture of poke-root, same strength.—HALE.]

NURSING, FEEDING AND WEANING.

In the first place, the mother is the only natural and desirable nurse for her babe. It is hoped that every woman who reads this book can truthfully say that the sweeping remark made by an English journal does not apply to her, namely, that "society has put maternity out of fashion, and the nursery is, nine times out of ten, a place of punishment, and not of pleasure, to the modern mother." If "the fashionable woman of to-day is hardly disposed to count her children among the goods the gods give," let us turn in disgust from her and hopefully declare that few women are fashionable. The mother should if possible keep her child at her breast—it is an unnatural mother who will not, if her health does not make it manifestly unwise. Aside from the question of morally depraved nurses, it is best for the physical health of the babe that the mother give to it all personal care that her health and circumstances will permit—and he is less than a thoughtful and loving husband who does not share her toils as he can. Due attention from the mother will ward off very many of the ills of infancy, and her God-given place can be filled by no nurse. Besides, she who thus nurses her child in nature's way fortifies herself against many "pangs and pains" that are the heritage of the silly votaries of fashion who choose the other course. The nursing at the breast is essential to the health of both mother and offspring.

At the Breast.—It has been said that the highest welfare of the babe cannot be insured if it is separated from the mother's breast. It is presumed that she has so cared for this part of her organism as to favor a regular and adequate supply of milk; but she should know that not only does her diet have a marked effect on the kind of nourishment she affords her infant, but that anything except a calm and equable mental mood is prejudicial, as is also unwise physical exercise. She should avoid all violent emotions, guard her own table against food which will derange her digestion or unfavorably influence the comfort of her babe. She must keep her body comfortable, and free from extreme heat in particular.

The milk that is secreted immediately after birth is absolutely essential to the well-being of the infant, and suckling is nature's method of provoking its secretion. If the mother experiences any irregularity in times, quantity, or quality of such secretion, she should consult her physician to ascertain the particular cause and remove it. The stomach of a new-born babe is very small, a fact which suggests that it is easily overloaded on the one hand, and that, on the other, it must frequently receive a proper amount of nourishment for the support and growth of the body. Give the breasts alternately, at intervals of an hour and a half to two hours at first, gradually

increasing to three or four hours as the babe grows older. As a rule, no artificial food should be given when the natural milk is good, particularly before the seventh month. The mother's milk is certainly good if her babe thrives on it, and the health and development of the child are unquestionably most favored by the breast-milk, while its withdrawal as certainly entails a great part of the weakness, sickness and death of children, and is too often the original source of debility in after-life. The babe may be sick after nursing and the milk yet be of good quality. Such sickness is many times noticed when the child lies on the left side after suckling, because the liver, proportionately very large at this age, presses upon the distended stomach. For obvious reasons, this difficulty, if it arises while the babe is at the right breast, may often be corrected by simply turning the child's legs under the mother's right arm so that it may lie on the right side.

Obstacles to Suckling.—Among the causes of a failure to suckle are the chafing, excoriation and inflammation of the breasts and nipples to which reference has been made. These give pain to the mother and create disgust in the babe. Sometimes the babe refuses to take the breast, especially during the first day or two, because mucus or perspiration adheres to the nipple or breast, and the parts should evidently be bathed with a little warm water and be well and gently dried before they are given to the child. In such a case, and in others in which the babe refuses the nipple, it will be well to put some sugar on the nipple or smear it with cream. As simple a thing as awkwardness on the part of the mother is sometimes the reason for the babe not taking the breast—and she must prescribe for herself, for we cannot. Few things are so conducive to irregularity in suckling as the practice of giving the child the breast whenever it cries. Oftentimes this is just the wrong thing to do, for a deranged stomach is quite apt to be the cause of the crying and evidently does not call for food. A good rule upon the intervals between the times of suckling was given above and it is of the highest importance that regularity be maintained. Giving the breast at all times, day and night, is very bad, spoiling and injuring the child and causing weariness in the mother. It is easy to train the child to regularity in this matter. Though one breast may secrete milk more freely than another, it is wrong to use one exclusively, or even to offer it very much more frequently than the other. No mother should conclude that she is unfitted to nurse her babe until she has considered all of these points and others which may apply especially to her case.

The Wet-Nurse.—If for any reason the mother cannot safely keep her babe at the breast, a wet-nurse should be secured if possible, one whose health is as nearly perfect as can be secured, with a skin free from sores, her own child being in perfect health and of the age of the one which she is to

nurse. She should have a good family history in health and morals. If a trial shall show that the babe does not thrive on her milk, and that no successful correctives can well adapt her to its wants, a change should be sought. Before the change is made, however, it may be well to see whether the diet of the nurse is not at fault. A wet-nurse who is brought from a simple mode of life into a home of plenty or luxury is generally fed too freely, for the purpose of insuring a full supply of milk, and the almost invariable result is a decline in the quality of her milk. Her food should be more nearly like what she has been accustomed to, provided it be wholesome and in an adequate quantity.

By Hand.—If a wet-nurse can not be secured when the mother is clearly unable to nurse her babe, it unfortunately becomes necessary to feed by hand, even though it is known that the chances of maintaining life are sadly against the babe. Though goat's milk is the best substitute for that of the woman, it is so difficult to obtain that the next best, that of the cow, must generally be used. Extreme care should be taken to get it from a young, healthy cow, taking the supply from the same one all the time if possible. At any rate, the animal which furnishes the milk must receive an adequate amount of the most wholesome food, avoiding many kinds of green weeds and other articles which give the milk an unpleasant taste or odor. For young infants the milk should be as fresh as possible, and be diluted by adding an equal amount of tepid or hot water. In many cases, when the child throws up the milk in lumps, it will be necessary to reduce it still more, perhaps even using one part of milk to two of water. As the child grows older, lessen the amount of water. To each pint of the dilution add a drachm of powdered loaf sugar (never brown sugar), or better still, sugar of milk, and a few grains of fine salt may be put in with profit. Add two grains of finely powdered phosphate of lime. If the milk curdles, a teaspoonful or two of lime-water may be beneficially added to a pint. If the milk is persistently thrown up in lumps from the stomach, the amount of lime-water may be increased if it does not provoke vomiting. Such untoward consequences may be largely avoided by care in keeping the bottle strictly clean, cleansing it after each feeding to remove all sourness and coagulation. It is best to have two bottles, changing and cleansing every four hours. The milk should be given at a temperature of 98° F. If cow's milk disagrees, give five to ten drops of pancreatic emulsion twice daily in a teaspoonful of sweetened water to assist digestion. This will often afford the desired relief, too, from various disorders of the stomach and bowels of infants.

A Sad but Common Experience.—When a child is deprived of the breast-milk and sustained by an artificial diet, it is very liable to a sad de-

cline. At first it simply fails to thrive and is more or less fretful, but little notice is perhaps taken of the warning; then the flesh loses some of its firmness; the child is sick once or twice daily; the bowels are a little loose, the discharges perhaps clayey and offensive; the sleep is disturbed, the eyelids being open a little. If still neglected, the child becomes very ill, has a bad diarrhœa, the discharges changing often in character, causing a red irritation about the anus and on the buttocks; the appetite is lost; the child cries or moans nearly all the time, and rapidly loses flesh; the eyes are bright; the cheeks are sunken; the soft spot on the head falls in; the mouth is sore and drawn down, perhaps with cracks in the corners, and with aphthæ on the tongue and roof of the mouth. The diarrhœa advances; extreme thirst causes the child to receive any article of food or drink that will soothe its burning mouth, and this may lead to the impression that the child is hungry, though the passage of undigested food from the bowels shows one her mistake. Then the brain is involved; the babe utters shrill cries which die away in moans, the end is near, and if the milk of a healthy woman is not supplied, fatal results ensue. Such a resort should be had from the appearance of the first symptoms; indeed, it is this which may entirely ward off this very common and distressing complaint of children. Many deaths occur from "summer-complaint" (!) when the real difficulty is the withdrawal of the health-giving milk of the breast.

By furnishing milk from a healthy woman the whole difficulty, **even** in its advanced stages, will usually be rapidly corrected. As was previously suggested, some of the symptoms may be successfully treated by adding more lime-water to the cow's milk which is given, or by substituting condensed milk. An invaluable aid in removing this difficulty, as well as others in which the bowels are deranged, cholera infantum included, is raw beef. Cut a piece across the grain and scrape off as much of the pulp as possible, leaving the fibers; then slice off the ends of the fibers and thus make another surface to be scraped as before. Add a little salt and pepsin to the pulp and feed it to the babe. If it is too weak to take it of its own accord, good results may be obtained by squirting the juice of raw beef into the mouth, a teaspoonful at a time. In some cases the babe will suck strips of raw beef. In any of these forms such treatment will have very beneficial effects. Since the substitutes for the mother's milk are often the cause of this difficulty, we here give one that has been frequently used with excellent results: In a half pint of hot water dissolve one teaspoonful of loaf sugar, or sugar of milk, and a pinch of salt; stir in one tablespoonful of gelatine until it dissolves; add a half-pint of new cow's-milk and a tablespoonful of lime-water, stirring well, and then putting into a bottle for use. Again, ten or fifteen drops of Murdock's Liquid Food

may be given three or four times a day with gratifying results. One babe may be benefited by one expedient and a second one by another.

Change to Other Food.—A good substitute for cow's milk is found in fresh, carefully prepared condensed milk. The various prepared foods for infants do not contain the universal virtue that is claimed for them. Horlick's, Mellen's, Neave's, Nestle's and Imperial Granum all have some merit and one or more of them may, upon trial, be found suitable for a given babe, and others may hereafter be added to the list. But whatever artificial food is given, it should, as a rule, not be used more than twice in twenty-four hours, from the fourth to the seventh, eighth or ninth month, while the babe is at the breast. When weaning is commenced, it may be given oftener. In all cases, however, the transition to it from the milk-diet is to be gradual. The mother must use her judgment, aided by observation of the needs of her babe, for it is impossible that printed directions can apply to all cases. One child will assimilate an amount which would be highly prejudicial to another. Such foods are especially liable to disagree during the first three months.

Flesh-food is to be avoided until the eye-teeth and first molars are developed—an observation which contravenes the practice of most mothers and nurses. One of the commonest mistakes is in feeding children too often, though the other extreme is far from unknown. Too frequent eating, especially if sweetmeats and other indigestible articles are given, is the source of countless ills and pains of children. The intervals between feeding and the quantities given must be largely regulated by the constitution, temperament and age of the child, and a reasonable observation and experience must be the guide. If the babe is in health, its own inclination is a fair guide in these matters when it is at the breast. In feeding from a bottle, about four ounces at a feeding and at intervals of two hours at first, the bottle being given three times during the night, will be about the rule. After that age, both the quantity and intervals may be gradually increased, the periods being about three hours each, the bottle being furnished twice during the night and the quantity increased, as the child grows older, until it is satisfied.

Weaning.—This should be effected between the ninth and twelfth months, being completed by the end of the year. To be sure, circumstances may require it earlier. It should be brought about gradually, the babe being accustomed to artificial food as suggested above, until the breast is given only at night, and then not at all. Begin when the child is in health, at least free from acute ailments; but be firm when the effort is once made, unless positive illness results, which is not often the case. If the child is willful and persistently seeks the breast, it will be serviceable to put upon

the nipple some bitter but harmless preparation to create an aversion to it. The babe which is slow in getting its teeth should be nursed longer, but should at the same time take one to two grains of phosphate of lime three or four times a day to promote the growth of the teeth. See Dentition.

CLOTHING AND BATHING.

Clothing.—The child's abdominal bandage should not be left off before the third month; and it should be continued beyond that time if there be a straining cough, or if the child cries violently a good deal. During the early years of a child's life, and particularly during the first, too little warmth is often insured by clothing. It should be remembered that the babe is delicately susceptible to cold. While coddling is injurious, the clothing should be light and warm, the feet, abdomen and lungs being especially protected. The flannel shirt should be continued until after teething if the mother would mitigate the diarrhœa, chills and other symptoms of that trying period. Of course the clothing should be loose, so as to afford free play to the vital organs. The conventional long dresses are ridiculous and have only the merit of warmth for the feet, and secure this at the expense of convenience. In summer, short clothes should be put on in two months; in winter, in the third month. Flannels are frequently changed too often. Two such changes a week are as many as should be made, and the flannels will not become too much soiled if the body is kept clean by bathing.

As the child grows older due allowance must be made for climate and different seasons; yet it is well to continue the use of flannel night-dresses as a guard against the colds so often contracted when the bedding is thrown off in sleep. If the child is delicate, the dress should come up so as to fully protect the chest. In general, let the clothing be clean, loose and light, warm in winter and cool in summer, the shoes and stockings being particularly warm and dry. Of course the weight of the clothes should rest upon the shoulders, not on the waist or thighs, and elastic suspenders will take the place of garters—any other adjustment betrays too much ignorance for the present day.

Bathing.—Thorough cleanliness by bathing will certainly keep off many affections of the skin and promote the general health, but some mothers do not know that water applied to the surface is among the most powerful agents, and they wash and scrub most industriously—when they are not stuffing the babe's stomach. Some children may thrive upon a full bath once or twice daily, but the greater number cannot stand one so often. The use of a soft sponge once or twice a day, with barely enough water to insure cleanliness, with a fuller bath once in three to five days, is the safer

rule for most children. For an infant, use water at a temperature of about 97°F. This may be gradually lowered until the child is a year old, when it may be 85° or even 80°. Too much care cannot be exercised in selecting the soap for these baths, for irritation and excoriation of the skin may be induced. Many kinds are prepared expressly for use on children, and that one should be adopted which experience dictates. Brisk but gentle dry friction should be applied after the bath until a pronounced glow is produced on the skin.

Though the temperature is as a rule to be lowered as the child grows older, some children shiver and become blue after a cold bath, indicating that the temperature is too cold. For delicate children, a little sea-salt may be added to the bath with benefit, the water being warm at first and gradually lowered from day to day if the proper reaction is experienced. The greatest danger in baths, aside from applying them too frequently, is that they will be too long-continued when they are used, thus producing weakness and exposing the child to colds. In the following chapter the reader will find notes on the use of baths in sickness, and she will exercise her judgment in applying them to the babe, remembering that she is dealing with a constitution delicate by nature and more sensitive from disease.

SLEEP AND EXERCISE

Sleep.—The younger the child the more sleep it requires. The babe does little but eat, sleep—and cry. Let the infant sleep when it is so inclined, and train the older child to take a sleep during the day until it is at least three years of age, longer if it will. If the babe does not sleep well, be sure to keep it comfortably warm, guard the diet, and avoid “soothing syrups” and other means of murdering infants. Read the remarks on page 357 about “Poisonous Medicines.” Dr. Ellis says: “Mrs. Winslow’s Soothing Syrup, called also Quietness (appropriate name), resembles syrup of poppies. *Its effects are those of a narcotic.* Two doses of this once caused the death of a child aged fifteen months, with the usual signs of narcotic poison. One ounce contains one grain of morphia, with other opium alkaloids. It is not surprising that it should prove fatal to infants in small doses.” The same author says that fifty-six deaths were *recorded* as resulting from the use of Godfrey’s Cordial; that a dose of forty drops of Dalby’s Carminative is reported to have destroyed life in an infant; that Atkinson’s Infant Preservative contains a drachm of laudanum to the pint—it is not necessary to mention the other ingredients where the deadly laudanum is so plentiful; that Keyes’ Infant Preservative is like Atkinson’s and Godfrey’s, only stronger and more dangerous; that Steedman’s and Stedman’s Powders

are "the cause of great evil and even mortality among children," and that either of them "contains three-quarters of a grain of calomel!" He closes by saying: "I have an equal objection to worm powders; worm cakes; worm lozenges of all kinds. Calomel, jalap and santonine make up the bulk of these. You cannot tell the quantities nor proportions. It is infinitely better and *cheaper* in the long run (and that element seems to govern all things medical) to ask a respectable doctor to prescribe some worm medicine suitable to the *kind* of worms your child suffers from, and *also suitable to its constitution and actual state*, things which empirical remedies are far too free and aspiring to be shackled by." What mother among our readers will now turn from these words and deliberately poison her babe so that she may leave it, or so that it may stop its harmless crying?

Exercise.—Muscles were made for use and exercise, and the babe forms no exception. Of course the back and neck are so weak at first that they must always be carefully supported when the babe is not lying down. But even before it can sit up it should have that kind of recreation which it will take in rolling, kicking, slapping and laughing, if it has a chance. To give it full play, loose its clothing, including the napkin, lay it on a rug or bed, and let it play. This will often stop the crying which is generally the signal for another poor kind of exercise, which consists in tossing the babe into the air and handling it roughly in other ways. It may be said in passing that the very common practice of trotting the babe on the knee is a bad one, and conduces to derangements of the stomach and brain in particular. After a time the babe will get more exercise in creeping and walking, though these are not to be encouraged beyond the child's strength. The trundle is an excellent aid in learning to walk and in walking thereafter.

But none of these can take the place of daily open-air recreation, either in the arms or in the cab, when the weather will permit. Give the babe an abundance of fresh air and sunlight if you would have it evince health and good humor. After it has left the arms, outdoor sports should be provided. See that the nursery is high, light, well ventilated, with the thermometer at from 65° to 70° F. Add the attractions of pictures, tools, chalk, blackboards,—anything to afford pure and agreeable amusement, and you will thus do much to hold the children at home, and protect them against immoral influences. Do not make the nursery an unwelcome place by reason of irksome exactions in lessons during the first years when the muscles are soon worn and the brain easily wearied by study.

IS THE BABY SICK?

This is often one of the most difficult questions to answer to one's satisfaction. How often the anxious mother knows that something is

wrong with her babe, and yet is not sure whether it is sick or not; or, if she decides that it is, cannot determine the seat or nature of the ailment. Since the babe is so completely helpless and unable to make its sufferings definitely known, it is evident that the mother must be guided very largely by her own observations. Even if she calls a physician, he must depend much more upon what she can tell than when called to see an older child. It is therefore imperative that, whether in treatment by herself or by the doctor, her information be *exact and full*, not *indefinite or exaggerated*. It is not the purpose to treat here the diseases of the babe, as they have been considered in previous pages; but some admirable notes by Dr. Ellis are appropriated, with minor changes, to direct the mother in deciding *what disorder is affecting her babe*. The thoughtful woman will spend a good deal of time in studying these indications from the beginning of her babe's life, so that she may detect the first signs of sickness.

EXPRESSION OF THE COUNTENANCE.—This is very characteristic and remarkable in sick children. (1) Mere redness and flushing indicate a state of fever. (2) A deeper redness with alternate pallor and knitted brow means brain-trouble of some kind. (3) If squinting be superadded, or the pupils of the eyes are unequal in size, and especially if insensible to light (not shrinking before a lighted candle, for example), convulsions may be looked for at any moment, and whether convulsions occur or not, brain-mischief is imminent, or has actually commenced. (4) If the child's head becomes larger in proportion to the face, with protuberant forehead and sunken eyes, water on the brain is to be feared. (5) There is the over-bright eye, with too clear a complexion, long, fine hair, distinct veins, oval face, and early intelligence, which characterize tuberculosis, or disposition to consumption. (6) There is the thick and muddy-looking skin, thick upper lip, wide nostrils, thickened at the sides or "wings," the ready enlargement of glands of the neck behind the ear, or anywhere, and the backward temperament of scrofula. (7) There is the profuse perspiration of the head, the kicking off of the clothes at night, the general tenderness of the whole body, the child disliking to be touched, the old, care-worn look, bending bones with large ends, backwardness in cutting teeth and walking, which indicate rickets. (8) There is the "snuffling," flabby muscle, brown, cracked, rough, unwholesome-looking skin, with "spots" and "lumps" about the buttocks, the hair often falling off from eyelashes or eyebrows, the corners of the mouth and nose ulcerated, sundry breakings out of a coppery color, etc., which indicate a yet severer constitutional complaint, which, like the others mentioned, requires the early and careful attention of a skillful medical man. (9) An extremely contracted pupil, with a brilliant look of the eve indicates an overdose of opium, no uncommon

condition for a child whose mother administers "soothing syrups," "cordials," and the like. (10) On the other hand, tears, full, swollen eyes, and redness, may mean a bad influenza, cold, or an indication of coming measles; (11) similar symptoms, with much nervous excitability, vomiting, and a little cough, are the forerunners of whooping-cough. (12) A dark, "brick-red" flush, with swollen features, rapid breathing, and working of the nostrils, indicate inflammation of the lungs. (13) Lividity of the lips and general duskiness of the face are present in diseases causing urgent difficulty of breathing. (14) In diseases of the abdomen there is a well-marked, fretful look, with pinched nose, sunken eyes, and dark rings round the mouth and under the eyes.

Summary.—The *upper* portion of the face is affected chiefly in diseases of the brain, causing knitted brow, contracted forehead, rolling, fixed, or purposeless eyes. The *middle* portions of the face are changed in heart and lung affections; the nostrils are sharp, or distended, or working, and there is a bluish circle round the mouth, and dark rings under the eyes. The *lower* portion of the face suffers most in abdominal troubles; the cheeks are pale, sunken, puckered, the mouth drawn, the lips livid or pale.

GESTURES AND COMPORTMENT.—Listlessness, indisposition to move, and downright languor are early signs in the demeanor of a sick child. "He cannot hold his head up," is a significant phrase. (1) During acute pain a child keeps wonderfully still, dreading to move either the entire body or the affected limb which causes the pain. (2) An infant with abdominal pain draws its feet up to its stomach. (3) A child with pain or irritation in the brain puts its hand to its head, pulls at its hair or any covering that may be on the head, beats the air uncertainly, rolls the back of the head to and fro on the pillow. (4) In bad abdominal disease the legs are drawn up, the face is anxious and sunken, and the child picks at the bed-clothes. (5) In urgent difficulty of breathing it tears at its throat, puts its hand in its mouth, especially when false membranes are forming or the tongue is much furred and cracked. (6) Sleep of disturbed character, with grinding of the teeth, and by day picking of the nose, are characteristic signs of worms. (7) Disturbed sleep, with so-called "sardonic smile," may mean only wind and flatulence, but if in addition the thumbs are turned in on the palm, and the toes are also rigid and a little inverted, an attack of convulsions is likely to be imminent. (8) The child sits upright in urgent difficulty of breathing, squeezing its hands against its throat. (9) It lies on one side, the legs strongly bent, and the arms drawn close to or over the chest, in the later stages of tubercular meningitis and some other brain-affections.

THE CRY.—(1) It is labored, as if half suffocated, or as if a door

were shut between the child and the hearer, in inflammation of the lungs and capillary bronchitis. (2) It is hoarse in croup, brassy and metallic, with crowing inspirations. (3) In brain-disease, especially hydrocephalus, it is sharp, shrill and solitary, not easily to be forgotten when once heard; whereas in marasmus and tubercular peritonitis it is moaning and wailing. (4) Obstinate and long-continued crying, lasting for hours, is referable usually either to hunger or earache. (5) A moderate and rather peevish cry, attendant on suppressed cough, dry and low in character, is indicative of pneumonia. (6) A louder, shriller cry, also during coughing, or produced by movement, is pleuritic. (7) A cry accompanied by wriggling and writhing, and preceding the stools, is intestinal. (8) Moaning is especially characteristic of disease of the alimentary canal. (9) Children shed no tears before the third or fourth month, and the saliva appears about the third month. In children from two to seven years shedding tears is a favorable sign; the absence of them is the reverse.

THE PULSE.—The pulse is not an indication by which a mother can learn much in infants; the different qualities of the pulse are scarcely recognizable. There may be great variation in the number of beats consistently with health—there may be even irregularity consistently with health. The pulse is some fifteen or twenty beats slower during sleep, and also more regular; but sudden awakening or any agitation will often send the pulse up thirty or forty beats in the minute.

RESPIRATION.—The respiration in early infancy is irregular, like the pulse; the average of thirty-nine or forty breathings per minute may become seventy or eighty under any sudden excitement. During sleep respiration is more tranquil and regular. (1) In disease of the throat there is noisy breathing. (2) In bronchial and pneumonic attacks there is hurried, gasping, even panting breathing. (3) During acute pain, whether in the pleura or abdomen, the breathing is “caught,” stopped short by the pain, jerky and restrained in character. (4) Sighing breathing occurs sometimes in brain-disease.

TEMPERATURE.—A doctor would often be glad if a mother would register the temperature of her child for him at certain hours of the day. It is easily done; a thermometer proper for the purpose (called a clinical thermometer) is put under the armpit and left there for four or five minutes; children soon allow it to be done when they find that it does not hurt. The index of the instrument marks the degrees. In health it should be about 99° F.; any rise over 100° means feverishness; a rise to 103° or 104° indicates fever or inflammation; a further rise to 106° or 107° indicates a very serious and even dangerous state of things. Nothing can be simpler than thermometer observations, and being absolutely accurate, are

most valuable to the physician. It is surprising how the hand deceives; we think a child burning when the thermometer assures us the blood-heat is not really very high; we think the heat of the skin ordinary when the index shows perhaps 105° . Looking to the uncertain indications of the pulse and respiration in children, the thermometer becomes the more valuable.

THE MOUTH, BREATH, SKIN, ETC.—The mouth should be moist, cool, pale; the breath sweet; the skin firm, smooth, elastic to the touch, the surface mottled; the arms and legs moving freely. (1) Fever, dysenteric diarrhœa and ulcerated mouth cause heat and dryness of the mouth, cracked lips, and hot, sour breath. (2) Aphtha, or thrush, is common in infants, from improper feeding and gastric and intestinal irritation. (3) In a low "typhoid" state, thrush is often significant of the end being near.

(1) Flabby skin and flesh mean that the child is not thriving. (2) A hot, dry skin is present in all inflammatory and febrile attacks. (3) A clammy skin indicates collapse and weakness. (4) Spots on the skin are most characteristic of certain diseases, as the lake-colored, horseshoe-shaped blotches of measles; (5) the flush, like a scald from boiling water, of scarlatina; (6) the vesicle of smallpox and the like. (7) There is the mud-colored skin of chronic diarrhœa, a leaden hue, very remarkable when once seen; (8) the yellow color of jaundice; (9) the blue of cyanosis; (10) and the purplish tinge of impending suffocation.

THE TONGUE.—The following are the chief indications derivable from observations of the tongue: (1) A furred tongue, with whitish curd scattered over it, indicates dyspepsia and intestinal irritation. (2) A red, dry, hot tongue points to inflammation of the mouth, stomach, etc. (3) Aphtha, or thrush, when not an affection of infancy, is often associated with extreme exhaustion, lowness, and typhoidal condition. (4) A pale, flabby tongue, marked at the edges with the teeth, shows great debility. (5) White fur is generally indicative of fever. (6) Yellow fur indicates disorder of the liver and stomach, and intestinal affections. (7) Brown fur is indicative of a low typhoidal state. (8) A red, glazed tongue and a "raw-beef" tongue indicate disordered state of the mucous membrane of the stomach. (9) The so-called "strawberry tongue" is produced when the white fur begins to clear off after the third day or so of scarlet fever, and leaves the tongue deep red, broad, smoother looking, and dotted over with elevated papillæ, not unlike a strawberry in appearance.

VOMITING.—(1) The vomiting of young infants is often simply from over-feeding; they suck in more than the stomach can deal with. (2) But constant vomiting is a very serious matter, and may mean disease of the brain, besides being referable to disordered stomach, dyspepsia, intestinal

irritation, and other causes. (3) When indicative of disease of the brain, it is generally a very early symptom, and comes on independently of any food being taken; it is, in fact, persistent and apparently causeless. This in a child of three or four years is a most serious sign and requires prompt medical aid. (4) Vomiting is often an early precursor of some kind of fever, as measles or scarlatina; also of acute inflammations. (5) Whooping-cough is generally accompanied with vomiting at the close of the paroxysms.

EVACUATIONS.—The healthy motion of an infant varies in color from a light orange yellow to a greenish yellow—from yolk-of-egg color to that of a mess of mustard. The reaction is always acid. The smell should never be offensive, but resembling that of sour milk. The consistence may vary considerably within healthy limits. The first motions of an infant are black and viscid. The frequency of the infantile motions varies from two to four daily—and all through childhood the bowels are rather oftener relieved than in adult life. Constipation is rare; diarrhœa is common. (1) Motions containing a slimy, mucus-like jelly indicate the presence of worms. (2) Offensive, acid, pale-green motions indicate disordered stomach. (3) Dark-green evacuations indicate stomach disease of more serious character (calomel will, however, cause green motions, likened by writers to chopped spinach). (4) Fœtid, dark-brown motions are present in chronic diarrhœa. (5) Putty-like, pasty motions are due to acidity curdling the milk, and to sluggishness of the liver—the bile secreted being deficient in quantity.

The urine of infants is, of course, voided in the napkins. When these are pungent and the stain is dark, the urine is acrid and will easily inflame and irritate the surrounding parts in contact with it. Sponging with plenty of warm water, careful drying, and dusting with a little finely powdered arrow-root or the like, will be necessary. (2) The urine is often white and milky-looking when worms are present.

GENERAL OBSERVATIONS.—(1) In early childhood there is no relation between the intensity of the symptoms and the material lesion. The most intense fever, with restlessness, cries, and spasmodic movements, may disappear in twenty-four hours without leaving any traces. (2) Abundant perspiration is not observed in very young children; it is entirely replaced by moisture. (3) Fever always presents considerable remissions in the acute diseases of young children. (4) In the chronic diseases of infancy fever is almost always intermittent. (5) When children are asleep their pulse diminishes from fifteen to twenty pulsations. (6) The muscular movements which accompany cough, crying, agitation, etc., raise the pulse fifteen, thirty or even forty pulsations. (7) A child grows most rapidly in the first weeks of life; in the first year it should grow from 6 to 7 inches; from the 4th to the 16th year, about 2 inches yearly; from the 16th to the 17th year, $1\frac{1}{2}$

inches; from the 17th to the 20th year, 1 inch. Disease of the bones, rickets and scrofula retard growth. (8) A child should run alone at the end of a twelvemonth, and if when it has commenced to walk it uses chiefly its toes, and has a limping gait, more especially if pain be complained of in one knee, and tenderness be caused by handling the limb, incipient hip-joint disease may be inferred. Such an indication requires prompt advice.

By a study of the above indications of health and disease the mother will often know at once whether she can safely treat the child herself or must call the doctor. In either case she should *be prompt* in what is done, for a few hours in diseases of children make more difference than in those of later years. It is almost if not quite the rule that the doctor is called later than he ought to be. Train the child to put out the tongue for examination, and thus save yourself a great deal of trouble; teach the child to regard the doctor as a kind friend; never *threaten* it with a call from the doctor, as if he were some dreaded person, lest you defeat all good from his treatment; use tact, firmness, kindness and forbearance.

CALL THE DOCTOR.—The following six groups of symptoms, from the book, previously named, require the prompt attendance of the doctor: (1) A little poorliness, deepening perhaps toward evening to feverishness, with shivering. (2) Poorliness, feverishness, and hoarseness. (3) Poorliness, drowsiness, and stupor. (4) Poorliness, feverishness, and vomiting. (5) Headache, pains, disinclination to be touched, vomiting. (6) Diarrhœa and vomiting in young infants.

Doses.—When medicine is given to children it is very often administered in improper doses. It is impossible to give a rule that will apply to all cases, for what is the best for one may be *highly injurious* for another. The mother *must* be guided largely by her good sense and observation—and she will carefully notice, for instance, whether her babe is more delicate than the average at its age, and thus unfitted to take the average dose. The following table is a *fair general guide*, but is subject to the cautions just given.

Assuming 5 grains, drops, etc., as suitable for a child of 1 year,						
then	2	"	"	will be	"	"
	1	"	"	"	"	6 months
	8	"	"	"	"	3 "
	10	"	"	"	"	2 years
	15	"	"	"	"	3 "
	20	"	"	"	"	4 "
	30	"	"	"	"	7 "
						14 "

For ages not mentioned here the dose can be rationally adjusted by proper divisions of the amount, or by altering the frequency.

CHAPTER XIV.

MATURITY AND OLD AGE.

A COMPARISON.

THOUGH the two extremes of life, infancy and old age, present some striking contrasts, they are otherwise marked by no less striking resemblances. In one, the constitution has not attained to its destined vigor; in the other, it is losing it. In either case we detect not only a feebleness which calls for the special attention of those who are in fuller enjoyment of strength, but also a likeness in diseases—convulsions of infants and convulsions of the aged; diarrhœa of infancy and diarrhœa of old age; infantile eczema and senile eczema, etc. Hence, we see that the “second childhood” is more than a fiction, more a matter of important physical conditions than many suppose, and less a manifestation of perverseness, less a subject for adverse or patronizing remarks. In offering this chapter we desire to assume that all its readers are reverent toward the aged, and trust that some words will be uttered which will serve as aids to their filial affection in its impulses to relieve the burdens and pains of declining years. It is important for one to know that certain changes and conditions are to be expected and cannot be wholly avoided or corrected, and that, on the other hand, some which are to be equally expected can and should receive care and treatment.

It is not our purpose to give detailed medical treatment for the ills which afflict the old, for that is fully set forth in previous chapters. Nor do we confine ourselves to observations upon extreme old age, as marked by dotage and childishness, but shall consider topics of essential moment to all who are passing down toward the sunset of life. Again, it is not here in place to give a full picture of such decline, with those particulars which are familiar to all and subject to no effectual correction, as the slowing step and ungraceful halt, the wasting flesh and wrinkled skin, the failing eye and ear. These can, it is true, be measurably modified by proper care, but only the requisite observance of the laws of health in the earlier years can be followed by the most desirable results. The present need is an examination of some

special functions and habits which demand our thought and assistance. The charming treatise of Dr. Fothergill will be freely used, as being particularly valuable and suited to our purposes. His own language will be used in the main, though he is not responsible for the whole.

The Digestive Organs.—In mature age there is no longer that keen relish for food which is so characteristic of youth, nor the same ease of digestion; but the appetite falls off or requires the stimulus of temptation in the nature of the viands themselves. But such constantly recurring temptation tends to weaken the digestive organs, and rich food and generous wine may only be consumed with impunity when taken in moderation. As time goes on, first one thing is found to disagree and then another, a little only being tolerated at first, but ultimately total abstinence is necessitated,—no portion, however small, is without its disturbing effect. No rules can be laid down as to this, for one thing will disagree with one and another with another. Quantity, however, is always an important matter, and small loads alone can be borne by the enfeebled organs. Digestion is much slower as well as less vigorous in the old, and consequently easily digestible food becomes necessary. The richer dishes and savory food once so esteemed are gradually given up, after repeated admonitions; and the quantity of meat, especially lean meat, consumed is usually much diminished, instinctively and intuitively. There is, indeed, a distinct tendency to return to the simpler forms of food proper to and preferred during childhood. In very old people the diet becomes once more largely farinaceous and saccharine, and meat is little craved after. This is a fortunate selective choice, as the digestibility of these forms of food suits the enfeebled organs.

The Bowels.—While the stomach has lost much of its power and the digestion is impaired, the action of the bowels has lost much of its pristine energy, and constipation is commonly present and a great source of discomfort. Laxatives are often found indispensable, and the mineral waters of Vichy, Carlsbad, Pullna, and Friedrichshall are indicated, and form with a glass of wine a useful and not unpalatable medicine as well as a beverage. Some such medication is indicated in most elderly people whose digestive systems are very sensitive to any load in the bowels. There is another strong reason why such medications should be resorted to, viz., the injurious effects of straining at stool upon the different parts of the body. This should always be avoided, and if the bowels do not move easily the attempt should be desisted from, and some time allowed to elapse, and if necessary some medicine taken, ere another attempt be made. Long exposure to cold should also be avoided, and the elderly should avoid closets or privies which are so situated as to be cold or draughty. Piles or hæmorrhoids are also outcomes of neglected bowels. In many cases the injection may be resorted

to with advantage, especially to avoid straining, and it is the safest, easiest and most efficacious expedient. A caution is needed at this point: it is natural that the bowels act less often in old age than in earlier life, and the failure to evacuate them daily is not to be taken as a signal for treatment, because it does not necessarily, or generally, indicate a condition that should be called constipation.

The Liver.—This attention to the bowels is desirable for its effects upon other organs, and especially upon the liver. In early and adult life the exercise taken is usually sufficient to maintain the action of the liver and to secure its efficient working; but as age creeps on and the locomotive powers are affected, the liver is deprived of these collateral aids, and so is liable to be laden with bile and to be easily deranged. An accumulation is not so easily cast off now as it was when the bowels were active, and so slighter causes are found to be disturbing and restoration to the healthy condition is slower and less easily effected. Rich food, especially when consisting largely of fat, is very apt to disagree with elderly people, and they commonly suffer for any such indulgence. Not only are these passing ailments to be avoided for themselves and the discomfort they occasion, but they act perniciously in inducing repeated congestions of the liver, which in time lead to disease.

The Kidneys and Skin.—The kidneys too are affected by any loading of the bowels, and at these times the secretion is thick, odorous, high-colored, and not unfrequently scanty. At other times in the elderly this secretion is profuse and troublesome, especially at nights, disturbing the person's rest and exposing him to cold from having to get out of bed to attend to these calls. Such arrangements should be made as to reduce the exposure to a minimum, and various appliances are now procurable at most surgical-instrument makers. There is also no greater trouble connected with the oncome of age than a highly sensitive condition of the urinary organs, so that not only are the calls frequent, but there is an urgency about them unknown to the young. Traveling becomes under these circumstances a source of much discomfort to the aged, especially in our express trains with their long runs betwixt station and station. This long run and the brief stay, scarcely admitting of time to reach a closet when the halt is made, makes traveling very irksome to the aged; but here again the surgical-instrument maker may be resorted to with advantage. The varying changes in the bulk as well as in the appearance of the urine are often sources of anxiety to elderly persons, often unnecessarily so; especially after a common cold, and mostly when it is "breaking," the urine is scanty, with a heavy deposit of white or pink-red color, often occasioning some alarm. It is really not an untoward sign—indeed, is an acceptable circumstance, preceding and indicating the yielding of the cold. Retention of urine of course needs surgical aid, and so

does incontinence in the male, however difficult it is at first sight to believe this. Incontinence here means not that the bladder will not retain its contents (the ordinary impression), but that it is permanently and persistently over-full, as the surgeon will soon demonstrate.

In the aged the organs do not and cannot assist each other to the same extent as they do in earlier years, and so when the kidneys are unequal to their work the skin no longer affords the aid it once furnished. Indeed, the skin gradually becomes very inactive and dry, and no longer responds so readily to the bath and other stimuli as it once did. It is said that this inactivity of the skin is the origin of the foul and disagreeable odor found in the breath of many middle-aged and elderly people. Attention to the skin is a desirable matter, both from a hygienic and a social point of view. This inactivity of the skin demands further that the bowels should not be neglected. (While thus insisting upon attention to the bowels, it must not be supposed that the writer is an advocate of habitual purgation.) Any load will make the breath all the more offensive.

The Respiration and Circulation.—At the time that the above-named changes are going on in the abdominal viscera, certain ones are inaugurated in the chest and the organs contained therein. The lungs are less elastic than they once were; they play less readily and are more easily torn by respiratory efforts. The air-tubes become liable to attacks of inflammation—bronchitis—an ailment which infests both extremes of life, and is a fatal malady to children, especially babies, and to elderly people; more especially if the strength be already failing. Not only do acute attacks of bronchitis often supervene, but a chronic condition of inflammation is not uncommon. This leads to shortness of breath, cough, and expectoration, and not uncommonly to serious organic changes. *Great and rapid changes of temperature should always be avoided by the old, as very liable to set up inflammatory mischief.*

The respiration of the elderly is more labored, and more a visible effort than it is in earlier days, and so the general movements should be slower and quieter. This change of locomotion is often irksome though imperative, and is the more necessary because the heart in old persons is not equal to sudden demands upon it. It is often altered both in size and in its textural integrity, and is not able to cope with urgent demands upon it. What would only produce a fit of violent action or palpitation in the young produces fatal disturbance in the action of the heart in the old. This is very commonly seen in the results of chasing an omnibus. In the young, a little violent action of the heart is felt, which soon goes off without any unpleasant consequences; in the elderly a dangerous attack of cardiac asthma may be so induced, and not uncommonly sudden death is the penalty paid for

such exertion. *All sudden action on the part of old persons is very undesirable, and tests too severely the internal organs, no longer in their former integrity.*

Elderly persons are much more liable than are the young to sudden death, either from failure of the heart's action, or from rupture of a blood-vessel in the brain (apoplexy) or elsewhere; for the blood-vessels become less elastic and even brittle in old age, and the heart grows larger in order to carry on the circulation in these rigid vessels. Consequently rupture of a diseased blood-vessel is no uncommon thing. All effort, all sudden exertion, all straining are to be avoided as age comes on, as being dangerous or harmful in their effects upon the internal organs; not only that, but hernia, or rupture of the abdominal wall, is now easily induced. This latter is a common accident to elderly persons, especially those who must labor for a living, and is a source of danger as well as discomfort. Herniæ should always be attended to, and trussed up by a proper and well-fitting truss, under which circumstances the danger to life is small. But trusses must fit well and closely to be of use, and a broken, or mended, or worn-out truss is of no real use, and only lulls its owner into a false sense of security.

The Nervous System.—It is impossible to comprehend properly the changes undergone in age, and the thousand alterations which then either manifest themselves or become necessitated, without a full consideration of the condition of the nervous system in declining life. These changes are not in the organic nervous system which rules digestion and the involuntary actions; although this suffers from the decaying action going on in the cerebro-spinal system, and is gradually enfeebled by the small quantity of nerve-force sent into it from the other, or force-generating system, so that the action of the organs under its control is rendered sluggish. The actions of organic life still go on comparatively unimpaired. It is in the brain and its allies that the marked changes manifest themselves. These actual anatomical changes go on hand in hand with the loss of intellectual power, with changes in temper, and even in disposition. Such changes are gradual; they commence insidiously and grow almost imperceptibly. They are distinctly visible to the close observer long before the condition called dotage is recognizable by the ordinary eye. There is a condition of impaired brain-power, of loss of intellectual grasp, of diminished power of observation and of reasoning; a time when the mental processes are no longer so efficient, nor the balancing or summing-up powers so trustworthy as they have been, long ere obvious unfitness for the duties of life is reached. Consequently it often happens that some are permitted to exercise their wonted authority and to hold their accustomed influence and weight when they no longer really merit it, nor should have it accorded to them; not that it is any de-

merit of theirs, but merely that their nervous system is decaying, and their intellectual power is waning. Thus elderly people become irritable, querulous or suspicious, vacillating or capricious, or willful and unrestrainable. They no longer tolerate argument, but resent any attempt at being reasoned with, as if it were intended to deliberately insult them. It is not difficult to understand how this is. They have been for years accustomed to think for themselves; they have learnt by experience to trust themselves, and it is only after accumulated evidence that they can admit to themselves that their mental powers are no longer what they were. The habits and practices of their past life are retained tenaciously, as if the giving up of any meant the admission of all the infirmities of age. Much injury is often done by such unwillingness to give up old habits, and frequently what was once a pleasant task is persisted in till it becomes a tedious toil, a laborious and exhausting duty. Commonly in business the duties of a chief or head of the firm are so merely routine, so confined to simply overlooking and assenting to what is done by others, that a semblance of active mental work is maintained long after all actual power to fulfill such function has fled. This routine duty, almost become an instinctive habit, does not test the declining powers, nor indicate their impairment; while it gives a delusive impression of unaffected integrity, and induces many to regard the brain as still in vigor and soundness when many instances to the contrary have actually come to light. More especially is such mental change the case when there is latent disease of the heart or kidneys, and the extent to which diseases of these two organs affect the nervous system and the mental processes is far beyond what could be conjectured by any mind unfamiliar with the observation of such action. When there is disease of the heart, the brain is but feebly supplied with blood and its action is unsustained or imperfect. When there is chronic Bright's disease or latent gout, there is active irritability and a condition of persistent ill-temper, a condition of unreasonableness, with a teasing consciousness that they are unreasonable, which is most trying to the sufferers.

Frequently elderly or aged persons are allowed to pursue courses which are inimical to health because their children do not actively oppose them; having never sat in judgment upon the actions of their parents, they feel a strong unwillingness to do so; and yet it is their duty to take action in the interest of their parent whose reasoning powers are no longer in their integrity. We are all familiar with instances of old persons persisting in doing things obviously hurtful to them or to others, such as adhering to a peculiar diet, some form of exercise, or maintaining a peculiar attitude toward one member of the family, or some similar action. Yet it is not the rule to regard this as evidence of loss of brain power, though a remark may

be made as to "how peculiar old people become." It is better, however, for all parties to recognize distinctly the fact that there is a long period of decaying mental power ere complete dotage is reached, and that the difference is not in kind but merely in degree. This cannot be too strongly insisted upon in order that a correct comprehension may exist as to the condition of elderly persons; without which those near and around them would scarcely feel justified in offering a quiet but persisting opposition to their caprices, and in gently disregarding their whims. They are no longer capable of thinking correctly and reasoning soundly for themselves; and the same control must be exercised over them and their actions as is exercised over the child before its mental powers have reached their full development.

Sleep.—Elderly people do not usually sleep so much or such long hours as do their juniors, but when very advanced life is reached much time is spent in sleep. In this respect the extremely aged again show the approach made by age toward the practice and habits of early childhood. But ere this condition of sleepy extreme age is reached, a period is passed through when the hours of sleep are very much diminished. If this diminution be within reasonable limits, the powers are not much impaired; it still being obvious that the brain would be all the better for longer hours of rest. The explanation of this sleeplessness lies commonly in the condition of the circulatory system which becomes so modified that the brain is not so easily relieved of its blood as before, and therefore sleep is not permissible. Consequently the habit of elderly people of taking sleep when they can get it, especially in the after-dinner sleep which ensues upon digestion, when the blood is largely attracted to the digestive organs, is well-founded and should not be interfered with unnecessarily. In many elderly people with latent gout nocturnal sleeplessness is a marked feature. They are not kept awake by pain, but they cannot "catch" sleep. Their thoughts are active but their reasoning is generally in a circle, and they come back to the exact point whence they started. This is exhausting to the brain, and when they do have a short sleep they awaken unrefreshed, and the tired brain is very irritable; all through the day they are easily "put out," and that, too, to an extent far out of all proportion to the exciting cause. They are conscious often of there being an element of unreasonableness in their case which is very exasperating. This is the condition of elderly persons who are a terror to their relations and a plague to their domestics. The expression in common use is, "there is no living with them, and no pleasing them." Nor is it difficult to understand that these wearied, unrested brains should be very irritable. Many, feeling their shortcomings, try the consolations of religion, and beg to have patience given them, and suffer much at finding no relief therefrom. In reality it is a physical condition of

the brain, not an infirmity of the mind or an unregenerateness of the spirit, and as such finds its true remedy in medical treatment. *This condition is always aggravated by the consumption of animal food, and hence this should be avoided.*

The sleeplessness of elderly people generally is troublesome to them, and the best hypnotic here is a dose of alcohol at bed-time. We all know how intensely awake we feel when getting into a cold, chill bed, but with young people this soon gives way to sound refreshing sleep. Not so, however, in the old. With them the cold contracts the blood-vessels of the skin, which do not readily relax again and so admit of the blood leaving the brain, a necessary factor of sleep; and their rest is broken and fitful when they do fall asleep. The chilled blood in the skin which, under these circumstances, makes all of us gasp as it passes along the blood-current swiftly into the lungs, disturbs the circulation through the lungs in elderly persons and causes those attacks of difficulty of breathing in the aged which are common in the small hours of the morning. *Such action is aggravated by the change in the temperature of the air in the bed-room from that of the day-room.* A combination of all these leads to the attacks of disease of the respiratory system which accrue without any external exposure. A dose of alcohol the last thing when getting into bed relaxes the vessels of the skin after their contraction, just as they are again dilating as the bed grows warm, and the action of the alcohol aiding the natural action, full dilatation of the blood-vessels of the skin ensues, sleep follows, and the pulmonary attacks are also thus avoided.

It is obvious that taking the chill off the air of the bed-room either by a little fire, or, where that is not practicable, by a bucketful of hot water being put down in the room half an hour before the time of retiring, is a useful adjunct. The bed may also be aired or even warmed to advantage. It must be borne in mind that fires in a bed-room at night, though perhaps absolutely required, are not in themselves desirable; they consume too much of the oxygen in the air which is in the room; and at night, during sleep, full supplies of oxygen are desirable. If the air of the room be just warmed, a draught of alcohol and hot water be taken when getting into bed, and the exposure of undressing be not too prolonged, the sleep of the elderly and the old would be much sounder, especially in the colder months.

As extreme age is reached the tendency to sleep is much increased, and in dotage the hours of sleep are equal to those of the waking time. There is little difference in the activity of the brain now, whether awake or asleep, and the inactive brain easily "drops off." The memory of the enterprising years of life is being blotted out, and the impressions first made in childhood, the last to be obliterated, assume much vividness and freshness.

After brief periods of such wakefulness they slumber off again into oblivion. One thing it is well to remember in connection with this sleepfulness, and that is this: *Old people resist cold almost as feebly as infants; their temperature soon falls, and then they catch cold.* In sleep, when the vessels of the skin are full of blood, the tendency to lose heat is much increased. Consequently, when very old people sleep much they are apt to catch cold, and should be well looked to when up and dressed. This is the more necessary as they do not know so well how to take care of themselves, and often let their wraps fall off.

Disorders of Old Age.—In advanced life the system becomes subject to many diseases to which it is less subject during the years of earlier life. For example, cancer is now much more frequent; but on the other hand its activity is lessened by the advance of age. In the young the forms of cancer are those of the quickly growing and rapidly fatal varieties; in the aged they approach more to the condition of mere cartilage. There is also a marked tendency to “rheums,” *i. e.*, flows from the different mucous surfaces, just as in the case of the child. Attacks of diarrhœa are easily induced by trifling variations or errors in diet. To these, their loss of teeth and consequent inability to masticate their food render them very liable. The resistive power of the system is much lowered, and acute disease is apt to run its course very quickly; the powers of the system being easily and readily exhausted. Complaints which cause old people to be bedridden often prolong their lives, as is seen in the case of people who break the neck of their thigh-bone. This fracture but rarely unites in the very old, and so its occurrence often confines the patients to bed, where they live years, as the condition itself is not dangerous to life. Bed-sores do not usually form on the bedridden if the attention paid is not practically inefficient, but when they do form they are very ominous and indicate much loss of vitality and impaired vital force. The different forms of water-beds and water-cushions now in vogue are very useful, and should be resorted to on the least threatening, as in bed-sores prevention is indeed preferable to cure, the latter being rarely practicable, particularly when the patient is very old.

CARE OF THE AGED.

Food.—Among the special points of care required by the old, the food is of vital importance. Directions deduced from foregoing remarks upon the digestive organs should be carefully heeded. Just as in infancy the absence of teeth and the feeble digestive functions require soft and easily digestible food, so in old age, when artificial teeth can not be used, it may be necessary to use an exclusively fluid diet.

Rest and Quiet.—While all understand that the aged can not engage in the sports and activities of youth, some do not reflect that they are quite as much inclined to quiet and even solitude as they are indisposed to muscular activity. To be sure, one should always be ready to volunteer entertainment and recreation when it is welcome, but it should be remembered that the easy and speechless hours of age are often much more enjoyable than the attempts on the part of friends to dispel loneliness. On the other hand, many old people require a good deal of restraint to keep them from attempts to show how much muscular effort they can put forth, not reflecting that a becoming old age is more creditable than a poorly feigned youth.

Warmth.—The absence of active exercise, the inability to digest much heat-producing food, the difficulties of respiration, the sluggish functions of the skin, and the disturbances of the heart and circulation, all characteristic of old age, point to the necessity for special pains to insure the requisite warmth of the body. As the child, before it has attained to its full vigor and vitality, is the subject of constant thought in this respect, so the old, who are losing that vigor and vitality, have pressing claims on our attention. The fact that they will remain uncomfortable for hours, either unconsciously or from a sense of pride in their supposed powers of endurance, makes it imperative that we attend to their wants without being solicited to do so. Their living-apartments should be kept warmer than those suitable for the prime of life. The temperature of their bed-rooms should be kept at from 63° to 68° F., and an abundance of woolen covering be supplied. Cold most seriously affects the aged, as one may infer, in general, from the great number of deaths among them during a severe winter. In such weather, and only in less measure at other times, their apartments should be especially protected against sudden changes of temperature. No other time of day calls for such close watching as early morning. "It no doubt often happens that the lonely encounter with death takes place in the stillness of the hour before sunrise, from a sudden access of cold air which the extreme feebleness of old age could not resist." The almost invariable fall in the temperature at this time calls for special care in fire and coverings, and in the case of the very old or feeble, a visit should always be made at the room at this hour.

Clothing.—The aged as well as infants are often insufficiently clad. A mistake is frequently made in supposing that extreme cold is a healthy tonic for every one. While this is not so far true in the case of vigorous constitutions as is generally supposed, it is especially erroneous in respect to the very old, the very young, and the feeble. Both infancy and old age need flannels continuously. If the old are perverse about this matter, as they often are from a mistaken pride in their professed strength, their

friends should insist on the precaution, and also on an avoidance of all exposure to extreme or depressing cold. The clothing is to be changed often, so that they will not have the strong and unpleasant odors so often noticeable about the old. Be sure to keep the feet of the aged warm.

"CHANGE OF LIFE."

Having spoken of some characteristics and ailments of extreme old age, we deem it fitting that something be said regarding the period which separates the prime of life from subsequent years, since it is the introduction to the age of which we have been treating, and is thus a time for laying the foundation for comfort in those last years. We speak of the period in which one begins to pass down the slope of life and undergo the changes to which allusion has been made above. At this time many diseases attack the system, especially in connection with the reproductive organs of the female, and also to a less extent those of the male—diseases which are inseparable from this period, and only to a slight extent avoidable. The change of life, as this period is called, rarely presses hardly on man, whose powers and passions usually fade out gradually and imperceptibly; but in the other sex it always forms a trying period, and broken health is the lot of most women at this time. Consequently the greatest attention to the health is now incumbent, and rest, quietness, and numerous collaterals become requisite. The greater the care now exercised the less broken the health will be, but no amount of care will entirely relieve any woman from the trials of this time. The stronger the health on entering this period the better. As certain inherited tendencies manifest themselves at puberty, so does the past life come out now, and the trials to which the system has been subjected reveal themselves. In the matron with many children the constitutional exhaustion induced by child-bearing usually leads to very broken health; in the involuntary spinster there is often such sexual excitement as leads to mental derangement; in the barren bride conception not unfrequently takes place. In the widow and the spinster this period is one of great trial; either from ill-health, often the result of uterine derangement, or from a renewal of the generative instinct. At this period of life many respectable and pure-minded women make foolish marriages, or form unfortunate or even disreputable attachments. That there may be much excuse to themselves for what they do is comprehensible enough, but the consequences are none the less unfortunate; and the miserable attachment remains an ugly fact, or the unworthy husband soon ceases to be an attraction; in either case the future happiness is utterly destroyed. Women thus liable to err should not only themselves strive to

pass through this trial with as little disturbance as possible, but it behooves their friends also to be upon their guard, and by solicitous care, without unnecessary interference, and great kindness and considerateness, to obviate any chance of the perturbed spirit taking some rash step, and throwing aside the future and the past in obedience to some imperative dictate of the present. Would that it were possible to think otherwise; but in this period lies one of the greatest trials to which women are subject. The records of the divorce court, the annals of asylums, the dates on the tombstones in the churchyards, all tell us of the severe strain put upon the system of the woman during this change of life. The requisite treatment for this period is set forth in a previous chapter.

Having passed this critical period and been relieved from the liability to disease and ill-health which the reproductive capacity engenders, woman enters into a period of comparative freedom from illness, and consequently from death. In advanced life, indeed, the proportion of women to men is most marked, and very old women are comparatively frequently found. Probably their habits have much to do with their comparatively high standard of health in advanced life; and of these their abstinence probably stands first. It may be an assured fact that the taste for a little gin and water is wonderfully prevalent among elderly women, and within bounds it is a wholesome and not a pernicious practice, especially when taken at bedtime; yet unquestionably aged women do not indulge in the pleasures of the tumbler and the table to anything like the same extent to which men of similar age do, among whom such indulgence is very prevalent; and to this must be attributed much of the superior longevity of women.

It must be acknowledged unreservedly that, though the degenerative changes described above are unavoidable and are normal to age, as ripeness merging into rottenness is to the apple, still an impetus can be given to these changes by the habits and practices of the individual. It is well known that in the drunkard the degenerative changes go on quickly, and so lead to an earlier death than is the case with a temperate man, their original constitutions being equal; so in one given to free living the changes will go on more swiftly than where moderation in food as well as drink is practiced. Outraged nature's laws know nothing of the plea of extenuating circumstances. We repeat, if a certain course detrimental to health be pursued, its effects cannot be obviated; a life of severe self-denial and rigid care may alone permit of a continuation of the existence imperiled by the follies of youth. Even when life is approaching its close, health and life are not removed altogether from the action of the habits of the individual himself. A determined persistence in the habits and practices of early life, now utterly unsuited to the aging frame, will surely imperil the chances of

a prolonged existence, no matter how proper at one time the exercises were. Long and severe hours of toil are not unhealthful to man in his prime, but they are certainly unsuited to the sunset of life. In age as in youth one can exercise an unmistakable influence over his own health and comfort.

So, too, with the other sex; a thousand little acts of indiscretion, of thoughtless folly, tell in time with their accumulated weight upon the health. The obvious effect may be far away off, hidden in the shrouded future, but it is nevertheless there, and in time will become visible enough. The consequence, or penalty, will be in strict proportion to the offence; but much will depend upon what goes before and comes after. An isolated piece of indiscretion may produce a severe cold, but a system not overtaxed soon rebounds from the stroke, and the after-effects may be entirely recovered from.

It is no part of wisdom but a real exhibition of vanity for one to "kick against the pricks," determined to show that he is not waning in his powers. Let him heed the warning of years, fortify his body against inevitable weakness and disease by attending to its required care, and thus be rewarded by that "crown of glory" which is conferred by a "green old age," cheerful and patient, a blessing to its possessor and his friends.



CHAPTER XV.

HOME NURSING.

IMPORTANCE OF THE SUBJECT.

WHILE no remedy is applicable to all disorders, nor to all cases of the same one, proper nursing is invariably helpful, often absolutely essential. Poor nursing can counteract the virtues of the most wisely chosen medicines and frequently baffles the highest medical skill. In this essential part of treatment there is a lamentable lack in the exercise of common sense, and too often an exhibition of positive stupidity. The fondest affection is no guarantee that one will or can suitably nurse the sick of even his own household. In view of such a defect in information the present chapter has been prepared, with a confidence that it will be especially welcome and be a medium through which anxious friends may intelligently set about doing the best thing for their patients. These directions are designed entirely for the domestic nurse, and since the greater part of nursing at home falls upon the wife, mother and sister, the feminine pronoun is more commonly used in alluding to the nurse.

It will be seen that the notes are applicable to cases of severe illness, and quite often to protracted ones. The nurse must exercise her judgment in adjusting them to minor ailments. In any case, she should keep ever in mind that *the welfare of the patient depends in many cases quite as much upon her as upon the physician.* This is too seldom heeded.

AIR AND WARMTH.

"The very first canon of nursing, the first and last thing upon which a nurse's attention must be fixed, the first essential point to the patient, without which all the rest you can do for him is as nothing, with which, I had almost said, you may leave all the rest alone, is this: **TO KEEP THE AIR HE BREATHES AS PURE AS THE EXTERNAL AIR, WITHOUT CHILLING HIM.**" (*Nightingale*). It is not always possible to observe this rule to perfection, but it is our business to act upon it as precisely as the circumstances will permit. The fear that the patient will take a cold very often leads the nurse

to exclude all air coming directly from the outside; but let it be known that a condition often exists which is called a cold when it is really a clogging of the skin and lungs with the foul exhalations of a closely-shut room—a remark which applies in only less measure to the well. Proper clothing and bed-covering should be the precautionary means used against colds, while fresh air is let in through an open window or ventilator and circulates slowly in all parts of the room, around and under the bed.

Two cautions are needed in securing *fresh* air. First, it is sheer folly to admit air into a sick-room from another apartment, unless the latter has been thoroughly aired, for that is replacing impure air with impure. Second, the outdoor air may be polluted by a neighboring cesspool, privy vault, stagnant water, stables, decaying matter of any kind, kitchen slops, and the like. Nor is it enough that the nurse is not sensible of the contamination, for an enfeebled constitution is exquisitely susceptible to such influences. It is imperative that one guard against all taints, so far as possible. Equal cautions will also be taken against the admission of dust, smoke of all kinds, and the fumes and steam from the kitchen. Nor should towels, bedding, and the like be dried or aired in the room unless the vapors and effluvia escaping therefrom can be driven out at once.

There is a remarkable dread of night-air; perhaps because patients more often take cold in the night, particularly toward morning when the nurse has neglected to supply the extra covers required by the fall in the temperature, or has, from sleepiness, failed to keep up the temperature of the body when it declines during sleep. Good air is needed at night as well as in the day, and that which one gets at night is often, particularly in large cities, better than that of the daytime. There can be no doubt that patients in small-pox and other infectious diseases are made worse, often fatally so, and that others of the household are stricken, from the practice of shutting the sufferer in a warm, closed room with heavy wraps. All such conditions insure an accumulation of the disease-germs which it is well-nigh impossible to counteract. Indeed, unwholesome apartments are often the sole cause of these disorders, as well as of scarlet fever and diphtheria. Give all such patients an abundance of fresh air.

Fresh air does not mean cold air. Observe this distinction and you may avoid many of the colds which are incident to improper ventilation. Keep the room at an even and suitable temperature, prevent cold air from falling directly upon the patient from a window before it has taken on the temperature of the room, and little fear need be felt. It is always best to have an open grate in the room, both as a ventilator and as a means of securing due warmth. No other warming apparatus equal to it has been found, and it is best, even in hot weather, to keep a slow fire in it.

In all cases regulate the temperature by a thermometer and do not depend upon the feelings of a well person. As a *general* temperature suitable to sick rooms, 60° F. may be given; in fevers and inflammations, say 55°; in nervous debility, dyspeptic disorders and those, speaking loosely, in which there is prostration, it is sometimes best to go higher than 60°. Indeed, if the patient feels continuously chilly, the temperature is to be gradually raised. [A temperature of 60° is not high enough for an American invalid, unless a high fever is present; 70° is safer and more agreeable.—HALE.]

If the nurse allows an invalid to come from a warm bed without sufficient covering, untoward results will almost surely ensue. Again, in all cases of a reduced state of the system, the legs should be frequently examined and coldness in them or other parts of the body be corrected by rubbing, by hot bottles, bricks, and the like—such attention being particularly needed in the morning.

But it is not enough that fresh air be admitted and chills be avoided; the air must be *kept* pure. The smell of food and medicines is to be excluded with care. The smoke of oil from a lamp or that from a tallow candle is particularly disagreeable. Sometimes, in shame be it said, the vessel containing the urine or discharges from the bowels is placed under the bed or in a closet until it is needed again, and the practice may be treated to a little disgusting refinement by putting a lid on the vessel. Such covering is needed only while the vessel is taken immediately from the room, emptied and cleansed. Nor should the contents ever be turned into a slop-pail for removal. Like care is to be observed when a patient vomits.

Disinfectants.—Some advise that no disinfectants be used about a sick-room, save in some infectious diseases. This is a good general rule, though a little vinegar may be dropped on coals to counteract odors from movements of the bowels, until ventilation can do its proper work. Carbolic acid, perfumed or not, chloride of lime, sulphurous acid, Burnett's and Condy's Fluids are all good general disinfectants if any are to be used. Those more especially suited to particular diseases are mentioned under their respective articles. Read below the "Precautions against Infection."

LIGHT.

A dark room is generally almost as bad as a close one. The nurse often admits light for the laudable purpose of reviving the patient's spirits, though few know that its effect is quite as marked upon the body as upon the mind. Besides, its presence as surely purifies the air as its absence induces a damp and musty condition. The patient needs the direct rays of

the sun and needs them all day, certainly those of the morning and mid-day. Both for cheerfulness and for essential influences on the body he should be so placed that the light may fall on him, and that he may look out of doors. In some acute cases, and whenever the eyes are affected, a strong light is not to be admitted. But even then it is best to merely soften it by green shades, still allowing it to come through a thin one at the head of the bed.

THE BED.

Provide a bed if possible that is not so wide or high as to make it inconvenient or laborious for the nurse to reach or lift the patient. Keep it in a light place and so much removed from the wall that circulation about and under it is complete and the nurse can easily pass around it. Avoid feather-beds and the old-style bedsteads with posts and curtains as you would avoid poison for an invalid. Do not make a pile of mattresses, but use springs or a wire-mattress, never with a close bottom under the mattress. Hair, husks or straw are the best, in the order named, for the mattress, and the covering should be as light as is consistent with warmth, woolen blankets being much better than cotton comforters in points of warmth, weight and airing. In a lingering illness, however, there is danger of bed-sores and a woolen blanket under the patient will aggravate the tendency. Since it acts in some measure as a poultice, it should be kept away from the body by a linen sheet.

If a bed becomes uncomfortably close while it is occupied, the nurse can give relief by lifting one side of the covering a few times, gently and slowly so as not to fan the patient, or the patient may support them on the knees. With a close, thickly-laid bed it is evident that there must be a constant warm dampness while it is in use, and the condition will be only worse if the patient has been taken out of it a short time and returns to it when it has simply been aired without being well dried. Few people make a distinction between *airing* and *drying* a bed. The exhalations from the lungs and skin are generally more active in the sick than in the well and the bed becomes proportionately more polluted. A nurse sometimes thinks that an invalid has taken a cold from leaving his bed, when he has actually contracted it by being placed in a bed from which he has been taken long enough to allow it to be aired until the dampness in it has become cold, and so worse than it was before. This is a point of the utmost moment, but it is difficult to impress it upon most people. Indeed, we can scarcely hope that it will be heeded by those who are so untidy, not to say filthy, as to spread the covers in their own bedrooms before a complete airing has been given in the morning, and thus shut in the dead and putrescent matters

which the skin has thrown off during the night—to be offensively “warmed over” the next night and mingled with another foul supply.

It is better to have two beds, each to be used twelve hours out of twenty-four, and it is desirable that they be in separate but adjoining rooms. When the patient leaves one, it should be *aired* and *dried* while not in use, and *well warmed* before he returns to it. This insures the cleansing of the mattress as well as the coverings, whereas the latter are too often the only subject of thought with the domestic nurse. If this arrangement is impracticable, have at least two furnishings for the bed and change them often.

Preparing the bed is of almost as much importance as the materials used. Always spread the under sheet smoothly and absolutely straight, and pin it to the mattress so that no folds or rucks can form to irritate the skin by long lying upon it. Put on every piece separately to insure perfect smoothness, and avoid dragging off the covers at the foot or sides.

In changing the sheets while the bed is occupied, place the patient on one side of the bed, roll the under sheet up toward him, spread half of the clean one in its place, folding the other half up against the patient. Now lift him to the other side, remove the soiled sheet, spread and secure the clean one. In replacing the top sheet, roll or fold the clean one crosswise, place it at the foot, under the other coverings, quickly draw it up, and then slip away the soiled one. When but one sheet is to be put on, that which was on top is usually spread under the patient, its place being taken by the clean one. Reverse the order. The patient feels the lower sheet with its little wrinkles much more than the upper, and he must suffer more from the annoyance of a rumpled covering under him than the eyes of the nurse and friends can be offended by the bad appearance.

Use soft pillows unless the patient prefers another, and, generally speaking, so adjust them that they will tend to keep the pressure from the chest. The nurse will often be too painstaking and will insist on rearranging them because they appear to her to be in an uncomfortable position. Make a change when the patient wants it made, but remember that what seems to another to be a distressing adjustment or confusion may be just what the patient has found best suited to his wants after repeated trials, and that you will harass him by insisting on making it better. [No sick person should ever sleep under cotton quilts. They obstruct ventilation and retain poisonous effluvia. Woolen blankets should always be used.--HALE.]

FURNITURE AND ADORNMENTS.

Little furniture should be kept in a sick room. It is better to have no carpets, rugs being spread on the parts of the floor most used to deaden

the noise. Carpets emit dust and retain the impurities of the air, both those from previous use of the room and those directly from the sick. The same remark applies to curtains and all superfluous drapery and upholstery, and only in a less degree to wall-paper. When a choice can be made, keep an invalid in a room without paper, particularly that which is green. Oiled walls are the best, and plaster or whitewash is better than paper.

But be sure to avoid gloom and monotony. If a patient lingers long, he will become distressingly tired of looking at the same spots, knots, and even pictures. Frequently give relief by rearranging the furniture and introducing new adornments of a pleasing nature, not forgetting to bring in flowers when practicable. The prejudice against bouquets is unreasonable, except when directed against lilies and others of a nauseous or depressing odor. It need hardly be said that flowers should be removed before they dry, decay, or become otherwise offensive. It is universally conceded that the state of the mind has a powerful influence on the body, and the fact deserves special attention in regard to the sick. How far different colors have a good or bad effect we cannot say. It has been claimed that scarlet flowers are stimulating, and deep blue exhausting. Close observation by the nurse will be of service upon this question, whether it concerns flowers or other particulars.

The furniture and other appointments are to be kept clean, but "setting things to rights" must be without noise and bustle. The ordinary dusting with a brush or dry rag, bad enough at any time, is reprehensible in the sick-room. Remove dust from furniture, shelves and floor with a damp rag or sponge.

Special Articles.—Among the appointments should be a thermometer to regulate the temperature of the room, a fever thermometer, a fountain syringe, and quite often a urinometer and test-tube. Other appliances and common remedies needed in every household are enumerated elsewhere.

PERSONAL CLEANLINESS.

If the nurse would only consider how many disagreeable experiences the patient is necessarily subjected to, she would be scrupulously careful not to add to them by uncleanness in herself; would frequently change her apparel and bathe, washing her hands often during the day, keeping her hair arranged, and in general maintaining a cleanly, tidy and pleasing address. She should be simply attired, without fussy laces and ribbons, noisy silks and bustling crinolines.

If the patient has even one change of apparel there is no excuse for uncleanness in him, aside from the inconvenience of the nurse and friends.

It is better to wash that change every day than to allow him to wear soiled clothes. He should be clad simply; ruffles look well when first put on, but soon become rumpled and look worse than plain bands and bosoms, to say nothing of comfort. An abundance of clean handkerchiefs and towels will be provided, of course.

In dressing the patient, care should be taken to warm the clothes; to gather up the sleeves so the hand can be easily slipped through them; and to pull down the garments smoothly, the under one first, but not so as to draw at the neck. In arranging the hair, snarls will be gently taken out, scratching be avoided, the nurse remembering too that combs and brushes were not made for use on the face and neck, and that the scalp is often the most sensitive part of the body in sickness.

But clean clothes are not enough. Suitable bathing or sponging is very important. The remarkable relief afforded by even a light use of the sponge makes it desirable that it be resorted to often, particularly in fevers, and the hands, feet and face can be treated with special safety. Except in mild cases, however, full baths are usually to be given under the advice of a physician or other person of experience. This subject is more fully treated in a later part of this chapter where the reader will find full directions.

WATCHING.

Under this head are grouped various points which come within the duties of the nurse, and which show that it rests upon her to attend to many things beside the administration of medicines and the mere physical necessities and comfort of her patient. In any case she should acquaint herself with the concise remarks of Chapter II upon detecting disease, and then appropriate such suggestions in this chapter as are applicable to the patient in hand.

Entertainment.—A protracted confinement is painfully monotonous, and the attendant should stimulate her ingenuity to impart variety. What to do and how to do it must be determined by the tastes, strength and temperament of the sufferer. The true nurse will make her preferences and convenience subordinate to the wishes and even whims of her charge, when their gratification is not clearly harmful, and will engage in reading, games, and the like, always stopping short of fatigue and annoyance to the patient. She should study to anticipate the patient's weariness and not wait for him to ask for some recreation. She is not an accomplished nurse who does not observe closely enough to see the most of the patient's wants without his making them known.

Three points should be noticed in reading, one of the most common

forms of entertainment: First, read distinctly, without shouting or laboring to be heard, so that the patient will be irritated neither by straining to catch the words nor by an undue volume or harshness of voice. Second, if the listener is falling asleep, keep on reading but let the voice gradually sink, until it can scarcely be heard, before stopping; if you stop suddenly when you suppose he is asleep, you will be quite as certain to arouse him thereby as if you were to speak to him. Third, if you are reading to yourself in a sick-room, do not read choice passages aloud in "snatches;" this is much more exhausting and annoying than for the patient to hear it all, for you will thus suddenly break those trains of thought in which all patients become more or less absorbed, and inflict an irritating shock upon the nervous system. It is often more entertaining to tell to the patient in your own language what an author says.

Disturbances.—"Unnecessary noise, or noise that creates expectation in the mind, is that which hurts a patient." Every nurse and member of the household should ponder that remark. Yet how many do just the wrong thing. They will walk on tip-toe or stand in the middle of the room, lest moving cause disturbance, touch the patient, when it is necessary at all, so delicately as to excite without helping him, speak to him in a feeble, plaintive tone, and, worse than all else, *whisper to a third person in the room*. When anything is to be done or said, let the voice, touch and step be firm and prompt, without being rude, spasmodic or excited. Conversation within a patient's hearing will make him uneasy, nervous and feverish if it is not so distinct that he can hear it. This remark applies as well to talking in another room, especially if the patient has a suspicion (and what suspicions does a patient not have?) that the conversation is about him. It will be all the more trying if the doctor is in the company. Nor is it enough that remarks not designed for the patient be beyond his hearing; *it must be beyond his knowledge*. He will endure a great deal of *necessary* noise and even jarring in and about the house (if it only be not sudden and startling), for he takes it in a reasonable way; but any low or indistinct conversation, squeaking of shoes, rustling of clothing, and the like, will have untoward effects. It is particularly urgent that tramping and other noise in a room above the patient be avoided, even if he must be moved upstairs. Such disturbance is peculiarly noticeable and the well can not know how susceptible the sick are to even the slightest jarring—a susceptibility which demands caution about leaning or sitting on the bed or couch, or shaking it much.

When you speak to a sick person, get in front of and close to him, where he can see and answer you easily; but be careful not to interrupt him suddenly when otherwise engaged, lest you give a shock to his sensitive

nervous system. On the other hand, do not keep him in expectation that you are to say something to him, for such a strain is as bad as a shock.

Any noise or sudden disturbance when an invalid is walking or standing will almost certainly induce serious consequences. Do not speak to him at such times unless he invites you. Remember too that standing is more trying than walking, and do not constrain him to stand still, but studiously avoid interrupting him when he chooses to do so. Whether walking, standing, sitting or rising, if he wishes to help himself, let him do it, taking as little notice of him as practicable. If he knows you are watching him and are ready to spring to his assistance, he will become injuriously excited. In observing these cautions the nurse must not forget the necessity of warning her patient against any sudden movements, as in rising or walking, during the stages of convalescence after a debilitating or prolonged sickness, for such movements have a very bad effect on the heart.

The touch of the nurse's hand very often arouses an invalid; even if it is perfectly comfortable to her, it may seem cold to the quiet and sensitive sleeper. She must be sure that her hands are *warm*.

Again, a light in the room may be objectionable. If so, remove it entirely if possible; otherwise shade it completely. Avoid two things: First, the placing of a light, whether shaded or not, so that reflections from a mirror or other surface can fall on the bed; second, the shading of a light by merely putting it in a pail. The latter makes a glaring spot on the ceiling in painful contrast to other parts of the room, and strikes where it will be more annoying than a full light.

Notes.—The doctor gets little real information from the average watcher. If the patient has been somewhat restless and awake several times, the nurse perhaps says he was awake all night, when he has really been asleep the most of the time. Or he may have lain awake but quiet all night, and yet be said to have rested well. He may have had fever for a short time, and the doctor be told that fever has continued since his last call. He may have taken a fair portion of a large meal set before him, and the nurse, speaking from what he left rather than from what he ate, say that he has eaten very little; or he may have dabbled in and "messed up" his food for some time, as if eating a good meal, and so have led the nurse to say that sufficient nourishment has been received. It is her duty to notice in all cases *how much* has been taken. If the pulse, respiration or moisture of the skin has varied, if the bowels or kidneys have acted, the doctor can learn little or nothing about the extent or character of such changes and functions, or the times and duration of their occurrence. The hours, frequency, amounts and character of such particulars should be known by the doctor. The evacuations from the bowels and bladder should be kept for his inspec-

tion, except in cases of infectious diseases, or at other times when he expressly says they need not be kept.

Such things can obviously be learned only from the nurse and she should keep a record of them—as *she will of course keep a record of directions left by the doctor about other matters*—and should use a pencil if her memory is not good. She must closely study the patient, carefully noting any change in color, flesh, strength, or vitality, any excitement, chills, headache, or other particular.

It has been well observed that the appearance of the face is not an invariable guide, nor even generally safe; for the features may seem normal or unchanging when very marked transitions are going on; and this shows how idle are many of the remarks of casual visitors who pass judgment upon a hasty look at the face. The whole body must be watched. The hands will be among the first to show emaciation, change of color, and deranged circulation. Again, the nurse must consider how far all of the seeming facts are to be modified in importance by the peculiarities of each patient. Though it is her business to follow the orders of an attending physician, she will see some things which he does not and should try to correct his judgment by giving additional facts, but must do this beyond the hearing and knowledge of the patient, *and never argue a point with the doctor in his presence.*

Precautions against Infection.—Special care is needed in certain malignant diseases to prevent the spread of infection to the nurse and others. To do this, keep all persons away from the patient (preferably out of the house) who are not absolutely needed. Insure good ventilation, with warmth and without draughts. Provide a second room if possible, with thorough ventilation, which the attendants may occupy when not necessarily with the patient, and in which they may keep a change of disinfected clothing for use when leaving the house.

Do not stand between the patient and the fire, but between him and an open window when practicable. Do not unnecessarily stay in the sick-room. Do not swallow saliva when with the patient. Expectorate and blow the nose after leaving the room. Frequently wash the hands in water containing carbolic acid, or in alcohol. Rinse out the mouth, eyes, nostrils and throat often with dilute Condy's Fluid, or dilute alcohol. Keep disinfectants in the room to counteract the effects of imperfect ventilation, such as copperas, charcoal, bromo-chloralum, carbolic acid, chloride of lime, and fumes of vinegar, it being sometimes advisable to use two or more in combination. Put on disinfected clothing when you leave the house. Keep up your health by good food, outdoor exercise, cleanliness, rest and temperance.

Simple Rules for Watchers.—Be watchful without being fussy. Be

always cheerful, but not playful when the patient wishes silence and quietude. Be obliging, granting everything asked if it is not manifestly harmful. Do not argue with the patient unless absolutely necessary; this can generally be avoided by simply *deciding for him*, being firm but never stern in doing the best thing. Be patient and *satisfy* the patient on a given point; it is only annoying to say, "O, it's nothing." Even so-called whims about draughts, odors, jars and the like may be based on facts which the healthy and less sensitive nurse does not notice. Sometimes the patient must not know the truth, and the nurse may be forced to tell a falsehood. Be confident but not rude in what you do. When handling the patient do not be too delicate in the touch; in lifting him, place the hand fully under the head, or the hand and arm under the shoulder; slip both hands under him, having him grasp you around the neck if need be, and he is able; in short, while being gentle, evince such strength and confidence that he will put perfect reliance upon your ability. Do not allow bottles, glasses, dishes and basins to accumulate in the room. Keep food out of the room beyond the sight and smell of the patient when not feeding him. Keep water and medicines that must be often used on a table close to the bed, bottles being corked and cups covered. Do not give water that has been standing any time in an open glass or pitcher.

If you are nursing a patient who is under a physician's care, *observe his directions implicitly*, administering medicines promptly as to times, doses and preparations, and following your own judgment in any changes only when you are *unmistakably* right. Common honor demands this.

VISITS.

It is difficult to decide whether visits, as a whole, are to be considered entertainments or annoyances, but it is certain that the nurse must often use tact and firmness to keep them from being the latter. In general, she must see that visitors observe such of the rules laid down for herself as apply to them and should be prompt and courteous in telling them when they are doing anything prejudicial to her charge. When talking to the sick, they must get before him, sit down, not on the bed, not manifest haste, not introduce exciting themes, not bluster or gesticulate, not "chatter" to entertain, not sit dumb with the mistaken idea of keeping the patient from taxing himself by conversation—remembering that a visit has a social aim, and if the patient is too feeble to bear talking he needs no visitors at all. Let the conversation be cheerful, distinct, foreign to the sick-room in the main, and not so long as to cause fatigue; let the visitor lead in it, not troubling the patient to do so, and leave when he comes to a point at which he must labor to find

something to say. Of course he will tell all the good news, and should consider that many things which are of little interest to himself in the bustle of business may be very entertaining in the monotony of a sick-room.

To "drop in a few minutes" and cheer (!) the patient by telling him how much better he is—when, if he is not exceedingly simple-minded, he knows that such a casual knowledge is worthless—is scarcely less than disgusting. On the other hand, an officious friend will call to tell the family that a certain doctor is successful in such cases, when he simply knows nothing about the ailment with which the patient is afflicted. The family are quite as solicitous as friends can be and will be the first to know when the attending physician is unequal to the demands, and there will almost always be time enough to give them advice when they ask for it. The visitor is not the one to give counsel about a doctor, a journey, a pill, or anything else. He should talk to the patient about his condition as little as possible. Does he suppose the sufferer wants others to come in and go over what he has thought a thousand times? Is not he presumably *tired of himself* and desirous of hearing about almost any other thing within his friend's knowledge?

Visitors should not be admitted when the patient is eating or otherwise engaged; nor should their presence in the house be known at such times. When one is so ill that friends are not admitted, he should as a rule not know that particular ones have called, for the refusal to allow them to come in makes him more anxious about his condition.

REMEDIES.

In the chapter devoted to *Materia Medica* are some essential observations and cautions on the preparations suitable for given remedies. These should be made familiar to all who shall use this book, and especially to her who shall nurse the sick. It is surprising to see how reckless are many otherwise prudent people in giving medicines. They administer any and every thing that passes under a given name, though it may be wholly different from what has been recommended by the physician or author. The *names* of some medicines prescribed in domestic books are identical with those popularly applied to others of a very different nature. For this reason it is necessary in this work to generally apply to medicines their technical names, and direct the reader to use them in such forms, doses and strength as are specified in the chapter to which allusion has just been made. In that place will be gained the needed instruction on the medicines. Some drinks and other expedients which are often prescribed in connection with specific remedies are described below under "Feeding the Sick." The nurse will

be called upon to make poultices, liniments, washes, and the like. Of these, such as call for the use of drugs are mentioned in the *Materia Medica* where they properly belong, since they are usually made on special formulæ to be filled by a druggist. Poultices, however, are almost always made from materials in the house and are therefore mentioned in this chapter.

The doctor alone knows how destitute are most households of remedies and appliances called for almost daily. If one in the family has headache, sore throat, indigestion, or other common ailment, nothing can be found for relief. Entirely too many people thus put themselves at the mercy of frequent and painful affections which they are perfectly competent to treat themselves, but which, in the absence of camphor, a simple gargle, an emetic, or other common remedy, goes on until a physician's call is necessary, with the expense incident thereto. In the chapter to which reference has been made above is given a list of medicines and appliances which the non-professional can use with profit and absolute safety. By the use of such the physician's aid will often be rendered unnecessary and the saving of three of his visits by a prompt treatment of simple affections will cover the entire cost. Besides, the vials or boxes can be filled anew for the expense incurred by purchasing two or three prescriptions at a drug-store.

POULTICES.

These are applied to inflamed parts to mitigate pain, reduce inflammation, or hasten suppuration. They should generally be so applied as to reach beyond the parts involved; but when used on suppurating sores, they should be little larger than the opening in the skin after the discharge begins. That they may retain their heat and moisture the requisite time, cover them with oil-silk or folds of cotton; in this way they can be made thinner and less cumbersome. If too long continued, they will irritate the parts, and a too free use of them on boils may excite new ones. Since heat and moisture are the ends to be attained by poultices, the nurse may select from the following list as her judgment or convenience shall dictate, unless a particular kind has been prescribed. They may be applied directly to the skin or a layer of thin cloth may be put under them. To induce suppuration, they should be *hot*; to allay irritation, only *comfortably warm*. Compresses and fomentations answer much the same purpose as poultices, and are more cleanly and agreeable.

Flaxseed, or Linseed.—To avoid lumps, make as follows: Into a heated bowl pour boiling water; *sprinkle* in the linseed meal, stirring all the time until a thin dough is formed. Quickly spread upon a cloth or put into a bag and apply hot or warm as required. This retains moisture and

heat well, but may be too irritating for a sensitive skin. It will be more agreeable if its surface is spread with vaseline before it is applied.

Bread and Water.—Pour boiling water on slices of bread from which all crusts have been removed; put by the fire a few minutes, and then pour off the water; repeat this, then press out the bread, loosen it up, and apply as directed for linseed. If there be haste, simply dip into hot water a slice of bread, after removing the crusts, and apply at once.

Bread and Milk.—Put fine crumbs of stale bread in a heated dish; pour on boiling milk, meanwhile stirring well until the mixture is as thick as mush; be sure that it is smooth and free from lumps; apply as above.

Bran.—Place on the stove a pan containing bran, say a pint; pour on enough hot water to make it simply moist; throw into a heated bag enough to half fill it, close the mouth, and apply as hot as can be borne. Renew often. This kind soon sours, but it is convenient when large poultices must be used for a good while.

Indian Meal.—Spread upon a cloth common Indian-meal mush and apply as above directed.

Turnip or Carrot.—Boil the vegetable until soft, mash it with a fork so as to make it loose, and apply as directed for linseed.

Charcoal.—Sprinkle on the surface of a bread poultice a thin layer of finely powdered charcoal. It is good for foul sores with offensive smell.

Slippery Elm.—Pour boiling water on powdered slippery elm bark, stir until the consistence of mush is secured; apply as directed for linseed.

Starch.—Make a smooth, fairly thick paste of starch, free from lumps, spread on a cloth, and apply to the parts as noted for linseed.

Egg and Alum.—Mix well the whites of two eggs and a teaspoonful of pulverized alum, spread, and apply as directed for starch.

Mustard.—Stir ground mustard in boiling water until a thin paste is formed, spread it on a thick muslin cloth or brown paper, and apply; remove as soon as active smarting begins, not allowing it to produce a blister, ten or fifteen minutes usually being a proper time for its use.

Yeast.—Mix well a pound of flour and a pint of yeast, and use for foul and gangrenous sores, applying as other kinds of poultices.

COMPRESSES.

By these are meant cloths folded several times, dipped into water, lightly wrung out, and applied to affected parts for the purpose of either allaying inflammation, retaining heat, or inducing perspiration. They are recommended for various purposes and are either cold or warm according to the case in hand.

Cold Compress.—To reduce inflammation, use the cold compress and change it every five minutes or oftener. Sometimes it is advised to fold snow or pounded ice in a cloth, or put it into a rubber bag, and use in place of the cloth; this need not be changed so often but must be used with more caution, and only on competent medical advice. There is no part to which cold bandages are more often applied than on the trunk of the body, over the stomach and bowels, to assist digestion, to impart tone to the nerves and blood-vessels, and to allay pain in inflammation of the bowels, stomach, bladder and other organs. Such cold applications on these parts are not to be used by females during the menstrual period. This form of compress is used on the chest for congestion quite often, and on the throat for inflammatory affections; when applied to the latter, put over it a dry bandage so adjusted as to exclude the air as much as possible, change often, and when stopping their use, wash the throat with cold water and quickly dry to prevent colds. Indeed, care is always to be taken that a cold be not contracted by the use of a compress. If the surface continues cold after a compress has been used and proper drying has been applied, the cold application is not to be repeated, but the warm one is often recommended.

Warm Compress.—This is the same as the cold except that the water is to be tepid and covered with a dry cloth, preferably flannel, or with oil-silk, to exclude the air. As noted above, it is often substituted for the cold compress; it is always to be used by women during the menstrual flow if any compress at all is necessary.

In general, if applied too continuously, compresses will debilitate the skin and induce eruptions and even boils, an issue which is always to be guarded against. It is better to cover them with oil-silk, as the air is to be carefully shut out. They are generally best applied at night, the parts being sponged and thoroughly dried as soon as they are removed.

FOMENTATIONS.

A fomentation, like a compress, must answer substantially the purpose of a poultice, and by some is always used instead of the latter because of its more cleanly and agreeable nature. To make one, turn a piece of flannel into from three to eight folds; pour boiling water on it; fold it in a dry, hot towel and wring it out thus as dry as you can; apply to the affected part as hot as it can be borne; change as often as once in five minutes, two compresses being at hand so that one may be on all the time. Keep it covered with thick flannels to retain the heat. The second and following applications can be gradually raised in temperature. The attendant will often find them so hot that the hand can not hold them, and it will be necessary to use

sticks in wringing them out. If at any time the patient can not endure the direct heat, put a cloth on the affected part before applying the fomentation. Such an application is excellent for allaying pain in very many ailments. It is sometimes preferable to make hot and cold applications alternately. When the use of a fomentation is discontinued, the part should usually be covered with a cool or tepid compress for a few minutes; but in rheumatism, neuralgia, and other affections in which pain is liable to follow such discontinuance, a thick layer of cotton batting or a covering of warm flannels should be used as a protection against the air.

A very easy and effective method of applying moist heat is wrapping a moderately hot flat-iron or brick in a damp towel and holding it against the painful part. This is a luxury to one suffering from an ulcerated tooth or neuralgia of the face and head. If mere heat is required without moisture, as is often the case when the body or any other part of it is cold, apply hot, dry flannels in several folds, and change often; or use bags filled with hot bran, meal, salt or sand; or hot bottles, bricks, soap-stones, and the like; or better than all else, a rubber bag filled with hot water.

MASSAGE.

This is alluded to in several places in the foregoing pages, and is invaluable in many cases. It is a form of muscular exercise which consists in pinching the skin, moving the joints in any and all directions of which they are capable, tapping, pounding or slapping the surface, and kneading and squeezing the muscles. It may be applied to the whole body or only to a part, and may be continued from a few minutes to an hour or more, according to the strength of the patient and nurse. When it is used, the case is nearly always under the care of a physician, who can teach the nurse directly how to apply it. After a few trials it is very agreeable.

INJECTIONS.

Unless otherwise directed, use tepid or warm water for injections, whether in health or sickness. To relieve constipation, introduce a pint, quart, or even more, and have the patient lie down for from a few minutes to an hour before he empties the bowels. Introduce the water slowly and carefully, a part of it at a time, with sufficient intervals for it to make its way up into the bowel. Always oil the tube before inserting it. Use a fountain syringe if you can get it. If one with a bulb is in use, be sure to submerge the bulb entirely, then expel the air from it and let it fill with water, thus preventing the entrance of air into the bowel. No directions

are here needed for the injection of liquid food, for it is never resorted to except in cases which require a competent physician, and he will give the required instruction upon the kinds and their application.

GARGLES.

The best of gargles are often worthless as applied by the non-professional. To reach the tonsils and pharynx, they must flow down as far as possible without being swallowed, the head being thrown well back for this purpose. When a deposit is to be removed from the throat, dip into the gargle a piece of soft sponge or cloth free from lint (firmly fastened to a stick or pencil to avoid swallowing it), and then swab the parts briskly. Such a swab will be necessary when the throat of a small child is to be gargled. The reader will find the formulæ for gargles, and the affections to which they are respectively suited, in the *Materia Medica*.

EMETICS.

It is not unfrequently necessary to induce vomiting in cases of poisoning, extreme and persistent nausea, and the like. The most common and efficacious emetics are mentioned under "Poisons," in Chapter XI.

BATHS AND PACKS.

Every one knows that water fills an important place in nearly all treatment of disease, though few realize that it is one of the most powerful of agents, and may effect good or evil results in about equal measure, according to the way in which it is applied. An unwise use in health often reduces a strong constitution, and in sickness may kill a patient. No rule can be here given as to the times when a bath or pack may be used on a patient, other than that the nurse, when a physician is in attendance, is to follow his directions, with the possible exception of a light sponging with the cautions mentioned below. If the patient is weak, the greatest pains is necessary.

Observe the following points: Use a thermometer when you are to have the water at a certain temperature, and do not trust to your hand to determine when it is warm enough. Whether applying a pack or full bath, let the patient feel the blanket or water before going into it. When bathing, do not allow the ends of a cold towel to flap on the patient's body; and when applying a pack, do not be so "cruelly kind" as to put the cold, wet blanket slowly on small parts of the body at a time. Hang the towels by

a fire so that they will be warm, not too hot or scorched, when they are to be used; if they become too warm, shake them out an instant before using; in the absence of a fire, a heated stone, iron or other warmer can be used, the towels being wrapped around it before being used. Be gentle with weak, delicate and nervous patients, but firm and expeditious, without flurry or bluster. Do not irritate sores or tender spots, and be sure that your nails do not scratch the skin. In washing the hands or feet, place the vessel so that the water will surely fall back into it instead of running up the limbs. If the body is to be washed or sponged without the patient rising, spread a warm thick cloth down to protect the bed, and put a limb or other part under the cover as soon as it has been washed and thoroughly dried. A little vinegar, rose water, or cologne added to the bath will make it more refreshing, and other additions are recommended for special complaints under their respective articles. If the feet are hot, the desired relief will often be secured, without bathing, by rubbing cologne over them and between the toes. The sea-salt kept by druggists is a superior addition to bathing-water, and it is recommended at various places in this work.

If your patient has a mania for being bathed, put a reasonable restraint upon him, but without fretting him. Remember that one of the most common errors is continuing a bath too long. Before beginning, be sure that you have all the water, sponges, towels, and other appliances that will be needed; otherwise you may be compelled to leave the patient partially exposed, or cause weariness by prolonged disturbance. Be sure that you *thoroughly dry* all parts bathed or sponged, and induce circulation by as much rubbing as is requisite, or as the strength of the patient will warrant.

THE FULL BATH.—This is sometimes used after a sweating process; at other times without any previous treatment. The effects are stimulating and strengthening if there be sufficient vital force to bear it; otherwise it may be depressing and not be followed by proper reaction. It requires caution and should never be taken if there is reason to doubt the ability of the patient to withstand the possible depressing effects. First wet the patient's head and chest quickly; then have him enter the bath at once and remain a half minute. Dry and rub the body and cover quickly. The water should have a temperature of from 60° to 70° F. unless otherwise ordered.

THE HALF BATH.—This is generally used as a tonic and stimulant when the full bath would be too powerful. The water may be of the same temperature as that for the full bath, should be about six inches deep in the tub, and may be dashed over the body for three or four minutes; The body must be thoroughly dried, with considerable friction following. then if the patient is vigorous enough, active exercise in the open air is desirable, though preferably after a rest of a few moments.

THE HIP OR SITZ BATH.—This form of bath is very efficacious in many affections and is also one of the most convenient for general use. A common washing-tub may be used, though the tin or zinc tub made expressly for the purpose is preferable. Fill the tub a third full of water and have the patient sit in it, with the feet outside of the water—better outside of the tub and covered—only so much of the clothing being removed from the body as is necessary.

When this bath is used for its tonic and stimulating effects on the nerves of the bowels and organs of the pelvis, the patient should begin with tepid water, each day making it a little cooler for a week, after which it need not be warmed at all. It is generally to be continued from ten to fifteen minutes; but when it is used for lessening inflammation in the head or chest it may be continued for a half-hour or even longer.

If the sitz-bath is applied to relieve pain, as in colic, neuralgia, and other affections, it should be taken hot, the patient remaining in it fifteen or twenty minutes, well covered with blankets. If the bath causes a rush of blood to the head, a cloth wet in cold water should be kept upon the crown.

If the sitz-bath is taken by women during pregnancy, every night just before retiring, it will have an excellent effect, promote sleep, relieve congestions, and be invaluable in correcting disturbances in the organs of the abdomen and pelvis.

THE WET-SHEET PACK.—Lay upon a bed one or two comfortables and two or more woollen blankets. Take a sheet (preferably of coarse linen) large enough to envelope the whole body, if the entire body is to be treated, dip it in cold water, wring it out until no more will run from it, and spread it *smoothly* upon the blankets. Let the patient extend himself, without clothing, upon the sheet, and wrap it quickly and tightly about him from head to foot, arms and all, the face alone being free. Bring the blankets one at a time closely about him and thus tightly pack him. The first sensation is certainly disagreeable, but the feeling of cold passes away very soon and is followed by a pleasant coolness, and then by a genial warmth which perhaps ends in perspiration, though this sweating is not always desirable. If the patient is very weak and chilly, bottles or bags of hot water, heated bricks or stones, or other appliances may be put to the feet and perhaps under the armpits. If the head aches, put on it a towel wet with cold water. As a rule, the patient should remain in the pack until warmth is fully established and the whole skin is in a glow. The nature of the disease, however, must largely determine this matter, as well as the question whether sweating should be induced. On coming out of the pack, a tepid or cold bath should be given as quickly as possible.

In diseases of a febrile nature, this pack is very useful. In acute fevers,

the wet sheets must be changed according to the degree of heat, perhaps every fifteen minutes, until the dry, hot skin becomes softer and inclined to perspiration. In this condition the patient may remain for an hour or two, when the blankets should be loosened until perspiration ceases of its own accord; the tepid bath should then be given. This mode of treatment immediately abstracts heat, lowers the pulse, relieves headache and thirst in most cases, and does not enfeeble the functions of the body.

WET-SHEET RUBBING.—Throw a wet sheet over the head and body of the patient after he is divested of his clothing. This will create a slight shock. Let him remain in it from one to five minutes according to the amount of heat to be drawn off. One or two attendants should rub the body under the sheet, the patient assisting as much as he can. When the wet sheet is removed, rub the body with dry towels and cover it at once. This expedient has a good tonic effect on those who have a proper reaction after its use. To be sure, it should not be applied if the patient is too weak or delicately constituted to withstand the shock produced.

FEEDING THE SICK.

Much has been said and written upon the kinds of food that are suitable for the sick, but the average reader will find no more difficulty in deciding *what* to give than in the times, frequency and amount of food, and in the methods of preparation. It is obviously impossible to lay down invariable rules on these questions, but great assistance will be afforded by the following hints.

Generally, the food should be offered about the time of the usual meals. If the patient's stomach is sensitive and the physical strength on the decline, it will be necessary to feed oftener and in small quantities. The nurse must study the case and exercise her ingenuity in putting the meals at such times as are best, her judgment being corrected by the patient's pleasure or aversion, and by the caution that *in many acute disorders the absence of appetite is to be respected, since it is nature's protest against burdening the stomach*. Very often a too solicitous attendant does harm by trying to tempt the appetite in such cases. On the other hand, too much care may be taken to secure regularity in the times of feeding, which will compel the patient to feel hunger—perhaps with the sequel that he can not eat when the usual hour comes. This is more particularly true in chronic diseases, the sufferers from which are often too much starved. Change the hours when such a condition is noticed.

Remember that a patient's stomach is sensitive. If you find that he can not take food as the doctor recommends, a cupful every hour for example,

divide it and feed the oftener. Again, when preparing a meal do not put before the patient more than he is likely to eat; a greater amount will almost surely "turn the stomach" more or less. If food is very rich, give a less quantity; if you dilute it and thus increase the bulk out of proportion to the nutritive qualities, the patient will probably become tired or his stomach be filled before he has taken enough nourishment.

In all cases, be sure that *every article* placed before a patient is pure, fresh, and properly cooked. An underdone potato, an egg the least tainted, or milk a little turned will almost certainly cause the whole to be left. Serve the food immediately after it is cooked. If the patient falls asleep while you are preparing it, as so often occurs, you must be painstaking enough to prepare it anew when he is ready for it.

Be scrupulously neat in the food. A dry, clean, white or fancy napkin spread over the tray is a good appetizer. Food smeared over the dishes disgusts the patient. It is better to lay the knife fork and spoons, clean and bright, on the tray and allow him to put them in the dishes. Be careful not to spill the tea out of the cup into the saucer, so that you may avoid bad looks and the dripping of the fluid on the clothes and bedding. If you are to feed the patient, make the mouthfuls as tempting as you can. By mouthfuls is not meant aggravatingly small bits, but those of fair size. If they are too small, weariness will come on before enough nourishment is taken. It is not polite or tidy to cool the food by blowing it, unless specially requested to do so; even then waving the food in the air, in a spoon or on a fork, is preferable. While feeding, keep crumbs from getting inside the patient's clothes, under the pillow, or in the bed. Make a diligent search for them afterward. The attendant rarely realizes how much annoyance and consequent fatigue are caused by a few minute, dry and hard crumbs which others do not notice. Do not talk to the patient while he is eating. Avoid all business topics and other matters of concern for some time after his meal.

Remove beyond the sight and smell of the invalid any food that may be left. Instead of eating in the intervals, as some thoughtlessly hope, he will more likely be completely disgusted with all food. It is not desirable that even the drinks be continuously in sight. The odor from food in preparation, whether for the patient or the family, should not reach the sick-room, an observation which can not be too strongly urged.

In general, the nurse must study the case carefully, noting particularly the *amount* of nourishment taken, thus forming an idea how much more is needed and being able to inform the doctor minutely upon this point. She should anticipate the wants of her charge by offering tempting food at such times as she knows he ought to have an appetite, be prompt in supplying what he needs and when he wants it, and be as careful not to give too much

as she is to give enough. It is sometimes necessary to coax the appetite; even when an invalid says he wants nothing he may have a relish for some inviting food which the nurse unexpectedly puts before him. At times he persistently refuses food because his digestive powers are weakened; in which case some preparation of pepsin or other digestive fluid will be of service, particularly when animal food is included in the meal.

SPECIAL ARTICLES OF FOOD.

Observation must be the ultimate guide in determining what articles are suitable for a given patient. One stomach or system may demand what another repels, and this will explain the apparently contradictory nature of works on diet—*the authors have studied different cases*. Again, different books based upon chemical analyses have utterances which are often flatly opposed to experience, which is doubtless due in great measure to the fact that chemistry has only decided that a given article contains elements which the human body *requires*, but obviously cannot tell whether a given system will *assimilate* these elements. The common sense and observation of the nurse and doctor will be the safest reliance in each case.

It does not come within the present limits to make a dainty cook of the reader; though the writer would be glad to do it, since a sick and sinking sufferer often the more rapidly declines because his attendant is versed in only the rudest cookery. In the preceding chapters are mentioned special articles of food and drink suited to the various diseases, and it now remains to tell how to prepare the most of the same, with others that will be in frequent demand. Of necessity the nurse must use what skill she has in preparing the more common foods, but should take the hints above given as an aid in its exercise.

Lime-Water.—Put into a quart bottle or jar a piece of unslaked lime as large as a hen's egg, previously crushed down, and fill the vessel with *fresh* rain-water (if other water is used, it is better to boil it before using unless it is known to be pure). Let it stand from six to twelve hours, when the lime will be at the bottom, with the clear liquid above it. Pour off the water for use without disturbing the lime. Keep the bottle or jar corked or covered to exclude dirt. As often as all the liquid is used, pour in water as before so long as the lime lasts or has strength.

Barley-Water.—Wash two tablespoonfuls of barley, soak it thirty minutes in a little tepid water; then stir it, with the water, into two cupfuls of boiling water that has been very slightly salted; simmer an hour, stirring frequently; sweeten to taste; strain before using.

Another method of making barley-water, often more palatable, is this:

Wash the same amount of barley as mentioned above in two or three waters; lightly drain; add a spoonful of good sugar and the peel of a quarter of a lemon, cut very thin; put the mixture into a vessel and pour on a pint of boiling water; cover the vessel and let it stand on ice; when cold, strain into another vessel; then use as desired. This preparation may be made thicker and stronger by using twice the amount of water and boiling for two hours before putting it on the ice.

Oatmeal-Water.—Stir into a gobletful of cold water a tablespoonful of oatmeal; let it stand an hour; strain through a thin open cloth and drink when it has become cold.

Toast-Water.—Put into a bowl some slices of thin toast, evenly browned without burning; cover them with boiling water; close the bowl to retain the steam, and allow the whole to cool; then strain, sweeten to taste and drink as cold as desired, flavoring or not as may be preferred.

Jelly-Water.—Stir into a gobletful of ice-water a tablespoonful of any good jelly, preferably such as is very tart, until they are thoroughly mixed.

Albumen-Water.—Dissolve the whites of two eggs, without beating, in a pint or more of water, sweeten with pure glycerine, flavor with orange-flower water, and drink cold.

Apple-Water.—Slice a large juicy apple, pour on a pint of boiling water, cover closely until cold, strain and sweeten to taste.

Gum-Arabic Water.—Put into a jar or pitcher two teaspoonfuls of gum Arabic, a pint of boiling water, a teaspoonful of white sugar and the juice of one lemon; keep over a fire until the gum is dissolved; use cold.

Lemonade.—Wipe the lemons well; take off a thin layer of the outside, avoiding the white portion; then carefully remove the white parts and throw them away, since they impart a bitter taste to the drink; cut the remaining part into thin slices, throw out the seeds, and add half of the thin outside peel; put into a pitcher, with sugar according to taste, pour on boiling water, a pint or more to two lemons; cover and place on ice to cool. If it is to be very cold, put ice into it. It may be made more palatable and nourishing by putting into a gobletful of the drink—using the slices of a whole lemon—a raw egg previously beaten to a froth. In health it is best to take the pains in slicing mentioned above; pounded ice may then be used instead of making it hot at all, and an egg may be simply broken upon the top and be properly beaten by shaking the drink thoroughly in two cups that closely fit at the top. The last makes a refreshing and nourishing drink in hot weather. For colds and some other disorders where perspiration is to be secured, the lemonade is to be made as here directed and taken hot.

Cornmeal Gruel.—Stir a cupful of cornmeal to a thin paste in cold

water, crushing out lumps; stir this into a quart of boiling water and let it boil for forty or fifty minutes, not allowing it to burn or scorch; salt to taste.

Arrowroot Gruel.—Stir three teaspoonfuls of arrowroot into a little cold water until a thin paste is made; pour in a half-pint of boiling water and thoroughly mix; boil five minutes; add a little salt and some milk, and sweeten to taste.

Oatmeal Gruel.—Slowly boil three ounces of oatmeal in a half-gallon of water until the whole is reduced to a quart; strain; add milk or not before serving, according to the taste of the patient.

Chicken Broth.—Dress a tender chicken, taking out the lungs (which are attached to the back), the skin, and all fat; chop all the remaining parts, including the bones, into small pieces; put this into a dish, salt and pour on a quart of cold water; let it simmer on a fire for two hours, strain so as to exclude all bits of bone and flesh; season to taste; if desired, thicken with flour or sago.

Codfish Broth.—Pick codfish fine; pour on hot water; let it stand thus fifteen to twenty minutes, without boiling; strain off and season to taste.

Another method of making codfish broth or soup is this: Cut the fish into thin slices across the grain; soak over night to extract the salt; pour off the water, put on fresh water and cook a half-hour; then add milk and a little flour for thickening; beat up and stir in an egg before serving.

Dried-Beef Gravy.—Shave off a half-pound of dried beef into thin slices; wash for a few minutes; add a quart of milk and thicken a little with flour; stir it over the fire for a few minutes longer and serve at once.

Chicken Soup.—Dress and cut up a young chicken; pound well, breaking the bones; add two quarts of cold water and salt to taste; stew for two hours; then strain and let it cool; skim off all fat before serving, and let it be eaten as warm as desired.

Raw-Beef Soup.—Chop fine a pound of raw beef; add a pint of water and five drops of muriatic acid; place on ice for some hours in a corked or closely covered vessel; then set the vessel for two hours in a pan of water at a temperature of 110 F.; strain the fluid well out of the mass, and serve. If the raw taste is disagreeable, it may be disguised by quickly roasting the beef on one side before chopping it.

Beef Tea.—Cut a pound of fresh beef very fine, removing all fat and gristle, and soak it eight to twelve hours in one-third of a quart of cold water; then take out the meat (keeping the water), put it into a pint and a half of water and let it simmer two hours, adding hot water as evaporation takes place to keep it at the same level all the time; pour off the broth into the cold liquid previously reserved, squeezing the meat dry; now spread the meat in a pan, slowly dry it in an oven, then powder it finely and add it to

the liquid that was drawn off; salt to taste, add twenty drops of muriatic acid and three grains of pepsin. Before serving, skim off all the fat, or soak it up with white blotting paper or a piece of browned bread.

The above is the best beef-tea obtainable, but the following will be a good substitute in most of the ordinary cases: Prepare the beef as just directed; soak it two hours in a pint of cold water; pour into a jar; set the latter in a kettle of boiling water and keep the water in the kettle boiling for three hours, at the same level all the time; then strain, salt to taste, and skim as before directed.

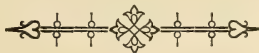
Dr. Gatchell gives these eight essential hints about making beef-tea: Never let it boil. Always begin with cold water. The finer the beef is cut the better. No fat, gristle or bones should remain in the meat. A pint of water to a pound of beef is the best rule. If beef-tea jellies when cold, it is not properly made. After it is made, carefully remove all traces of fat from the surface. To warm it up, put it into a cup and set the latter in a vessel of boiling water.

Oatmeal Porridge.—Mix two tablespoonfuls of coarse oatmeal into a gill of cold water, securing a uniform consistence; put it in a pan and pour in a pint of boiling water; stir and boil forty-five minutes; serve with cold milk. If the patient is not ready for it, it may be kept over a slow fire, if water is gradually added as evaporation goes on.

Graham Mush.—Wet a cupful of Graham flour in a little cold water; stir this into a quart of boiling water previously salted; boil a half-hour, stirring continuously.

Arrowroot Custard.—Wet three teaspoonfuls of arrowroot with a little cold milk and mix it into two cupfuls of boiling milk, stirring for three minutes; thoroughly beat together an egg and two tablespoonfuls of white sugar and whip it into the milk and arrowroot after they have been boiled the three minutes and taken from the fire; then put the whole over the fire, boil two minutes, flavor as desired, and serve cold or warm as it is preferred by the patient.

Tapioca Jelly.—Put a cupful of tapioca into a basin and barely cover it with water, soaking it thus for four hours; then set the basin in a pan of boiling water, adding more water if it becomes too thick; keep it boiling and stir frequently until it is clear; then put in the juice of one lemon; flavor to suit and pour into moulds; serve cold with cream.



CHAPTER XVI.

HYGIENE.

GENERAL REMARKS.

F all subjects pertaining to our physical being hygiene is first in point of importance. It is unfortunately true however that its study in practical life is generally second to that of disease in point of time. The closest students of health are the sick, to whom only the loss of a priceless possession has taught its value. The authors are convinced that this lamentable neglect results in great measure from the fact that works on hygiene are usually much lumbered with plausible theories which have innumerable *logical* rules and expedients, the greater number of which it is impossible to apply in connection with the daily duties of life and the surroundings of the average man. Upon this important theme therefore they will select from a long professional experience some simple rules and appliances whose observance is compatible with the cares of even a busy life.

THE CARE OF THE SKIN.

Few people have anything like an adequate conception of the great functions performed by the skin or of the serious diseases resulting from its neglect. It is of the highest importance in a study of its care that the reader have an intelligent idea of its anatomy and physiology. He is therefore referred to that subject as set forth in chapter VII.

The advantages of thorough personal cleanliness are not generally appreciated. Among the ancient Hindoos, Egyptians and Hebrews it was a religious rite, with the priest as physician. Under the Mosaic dispensation the regulations respecting ablutions were most minute. Among the Romans the bath was a fashionable and pleasurable resort. Among all civilized nations cleanliness has been observed in deference to society, though it has too often been rather for the sake of securing an attractive exterior than in obedience to the laws of health.

If one were to say to the average man or woman, "You are not clean," it is very certain that said average man or woman would be horrified and

feel insulted. It is a fact, nevertheless, that largely from ignorance, and partly from prejudice, we go through life "dirty," rarely knowing the physical pleasure to be derived from perfect cleanliness. It may be asked, What is perfect cleanliness? As generally understood, this means that the surface is free from "dirt." But to be clean, not only the surface of the skin but its pores as well must be free from impurity. Complete closing of the pores is rare, but partial stoppage is a common source of disease. For example, consumption frequently has its origin in diseases of the skin which throw upon the lungs more labor than nature intended that they should perform. A general disorder of civilized nations is an unhealthy and inert skin. To preserve its healthy action is an important aim of the true physician, and he has sought out many inventions and artificial means to this end.

The demands and follies of fashion have led to a use of various cosmetics and like preparations for beautifying the skin, which is inconsistent with the cleanliness required by health. The pores of the skin are clogged up with a substance which, however poisonous it be, may furnish the most welcome food for mites that burrow in the skin. Some fastidious ladies who use them would be shocked by the approach of one affected with the much loathed itch. Yet these toilet applications, by producing an unclean condition of the skin, invite parasites of larger size, and more repulsive appearance under the microscope, which thrive in great numbers in the follicles and glands of the skin until they are routed and drowned out by the flesh-brush and the free use of water. To be sure, other causes of uncleanliness may lead to the same result, for nature seems to express her abhorrence of filth in the body by inflicting upon "the unwashed" the parasites whose presence, if known, society would brand as a disgrace.

Those parts of the body which are most exposed, as the hands, face, neck and arms, should be washed at least twice a day, and as much oftener as one's occupation makes it necessary. Soft, luke-warm water should be used, with pure castile soap, the white being preferable. Persons with oily skins need more soap than those with dry, harsh skins.

Not only the exposed parts, but the skin over the entire body should be kept clean by frequent baths of some kind from earliest infancy to old age. "Next to eating and sleeping," says a distinguished philosopher, "the bath may be ranked among the very foremost of the necessities of life."

BATHS.

In taking baths, certain precautions must always be exercised. The bath should not be taken when the stomach is entirely empty, or when one is fatigued. Nor should it follow too closely after eating; three or four

hours should be permitted to elapse. The best time is about eleven o'clock in the morning, but for business people this is an inconvenient hour. Strong, healthy persons can bathe on rising in the morning, but that will not be prudent for the weak or invalids, unless especially prescribed by a physician. Though it is unquestionably true that very many people use baths too seldom and in an improper way, it is also certain that some bathe too often, and too indiscriminately as to times, frequency, and temperature of the water. The temperature of the various baths may be classified as follows:—

Cold Bath, from below	50° up to	70° F.
Tepid Bath,	85° “ “	95° “
Warm Bath,	96° “ “	104° “
Hot Bath,	102° “ “	110° “
Very Hot Bath,	110° “ “	120° “
Vapor Bath,	96° “ “	110° “
Turkish Bath,	110° “ “	140° “

The Turkish bath, used in moderation, is absolutely without danger and is the most efficient means of refreshment and reinvigoration. It is to be regretted that so few people avail themselves of this luxury. The prolonged employment of sweating, as in the wet-sheet pack of water-cures, if indulged in to excess, gives rise not infrequently to boils and other eruptions, which may be regarded as the result of debilitating treatment, instead of the escape of humors as some have said.

Sea-bathing is beneficial but should not be indulged in by the very old or very young, or by those who have languid circulation, or those who have chronic disease of the lungs, heart or brain. The following is a formula for artificial sea-water:

Chloride of Sodium (common salt),	9 lbs.
Crystallized Sulphate of Sodium,	4 “
Crystallized Chloride of Magnesium,	3½ “
Crystallized Chloride of Calcium,	12 oz.

This amount is sufficient for a single bath, and is to be dissolved in thirty gallons of water. Whatever the amount, keep about this proportion.

THE HAIR.

There is no difficulty in caring for the hair when it is worn short, as is the case with men and boys. It can be easily kept clean by plunging the head into a basin of water, briskly rubbing the scalp, and drying with a towel. Generally this is all that is necessary. If there be dandruff, it should not be

removed by combing and brushing. Put a little borax into the water that is used for washing, and brush the scalp, or use the following formula:—

Borax,	$\frac{1}{2}$ drachm.
Sulphate of Zinc,	5 grains.
Rose Water,	6 ounces.

Mix well. Rub on the spots of dandruff once a day. If after either application the hair be very dry and harsh, some of the preparations of petroleum, as cosmoline, petrolina or vaseline, may be used as a dressing.

In the case of women and girls, after the hair has once been allowed to grow it is better not to cut it, if it is desirable to let it grow long. If long hair is the glory of woman, it must be well cared for. It should be brushed twice a day, shaking it out and letting the air circulate through it. Keep the scalp perfectly clean. This is not an easy thing to do but it can be done, even when the hair is very thick and long. Braid it loosely, taking care not to wet unnecessarily any but the hair nearest the scalp. Use borax and water, or a little alcohol and water, or pure castile soap and water; part the hair with the fingers; rub every inch of the scalp thoroughly; then rinse carefully, not wetting the long braids much; dry by the fire with towels as well as possible; then with a coarse-toothed dressing comb and brush complete the drying process.

Since it has become unfashionable to dye the hair after becoming gray, probably no caution is necessary regarding the pernicious effects of the lead, sulphur and nitrate of silver that are very often used in the dyes.

Premature thinning of the hair is due to constitutional debility and chronic diseased conditions of the scalp, and sometimes it is hereditary. Whatever be the cause, it is best never to use any of the advertised "invigorators." It is with hair tonics as with most other patent medicines; they not only do no good but generally positive harm, beside depleting the purse. The best treatment, in general, for this and for premature change of the hair to gray is the bathing of the scalp often with equal parts of alcohol and water, then thoroughly rubbing in vaseline, cosmoline or petrolina.

THE MOUTH AND TEETH.

Of course no one in this enlightened age is ignorant of the necessity of caring for the teeth, on the grounds of both health and decency. Every morning they should be brushed and the tongue and mouth be thoroughly washed, that all of the accumulations of the night may be removed. After every meal they should be carefully cleansed with a soft brush and water, and occasionally a little prepared chalk and orris root may be used. The

best tooth-pick is a quill, and it should be well but not violently used after every meal.

The care of the teeth should begin at an early age. To be sure, the temporary teeth must be replaced by the permanent set, but the permanent ones must be trained to fill their proper places, and should not be allowed to come in contact with decay in the primary set or in themselves. A competent dentist should be frequently asked to inspect the teeth and correct existing evils during the period of shedding the temporary teeth, and all through life the teeth should be thus examined at least three times a year. The well educated dentist never extricates a tooth if it is possible to save it.

THE HANDS AND FEET.

In the summer season but little care is needed for the hands, except washing with fine soap and cold water and the daily use of the nail-brush. In cold weather pains should be taken not to go out with uncovered hands immediately after washing them. Cosmoline is a good preventive of chapping. Pure glycerine diluted with pure water is good for some skins, but does not agree with all. The nails should be carefully trimmed with sharp scissors (they are much better than a knife), not cut very short, shaped so as to give a tapering effect to the finger, and long enough to protect the flesh from injury. Files and like instruments should not be used.

The foot is very delicately and wonderfully formed of bones and tendons, arranged in the form of an arch so as best to support the weight of the body, and to prevent any shocks to the person when walking. Fashion has tried to improve upon nature, both in the "heathen Chinees" and among our own enlightened people, who certainly ought to know that a shoe much narrower than the foot must inevitably produce corns and bunions. To preserve the natural shape of the foot, the shoe must be rightly formed, that is, in accordance with the outline of the foot. The leather should be soft and pliable, the heel being as large as the heel of the foot, and not more than one inch or three-quarters of an inch high. The effect of too high a heel is to throw the weight of the body forward, causing great strain upon the ankle-joint and making the walk tottering and ungraceful.

High-top boots are not desirable, for they keep the leg in a perspiration, and they are uselessly burdensome to carry. Such boots can never be made to fit closely around the ankle and instep without being too tight elsewhere. Another objection to them is that they prevent due ventilation. No doubt the farmer or tourist will find rubber boots useful at times, but they become very offensive in a short time. Laborers in the country have a way of cleansing and sweetening them by filling them with dry oats when

they remove them from the feet. The oats seem to absorb some of the impurity that is collected.

Shoes should be made "rights and lefts," and for obvious reasons children should not be allowed to change shoes to alternate feet. If the heel wears down more on one side than on the other, it should be raised. Stockings should be well fitted, no wrinkles being allowed.

Every night the feet should be bathed, or at least wiped with a wet cloth, removing the perspiration that has accumulated and dried on during the day. The toe-nails should be carefully cut. It is well to use a nail-brush for them, so that all possible impurity may be removed. Should perspiration be excessive, bathe with vinegar and water. See *Excessive and Offensive Sweats* and their treatment in another chapter.

BEDS AND SLEEP.

Probably one-third of every twenty-four hours is spent in bed. Is it not important that we receive all the benefit possible, when so much time is spent in reinforcing "tired nature?" Shall we not make our beds the best that art and science can suggest?

First in importance is the mattress. It should be made of elastic material, supporting the body at all points. The hair mattress is without doubt the best. For delicate persons a thick cotton comfortable can be laid on it. Every bed should be fitted with some kind of springs. Probably the best kind is the woven-wire mattress. It is very durable, luxurious and cleanly. The pillows may be of feathers or hair; or the rubber air-pillows, which are so comforting to asthmatic persons, may be used. Sheets should be made of cotton; for summer use linen is not objectionable. The blankets should be all wool and of the best quality. The old-fashioned bed-quilt is the worst imaginable covering, having more weight than warmth. Beds should be well aired daily, and at least once a month everything pertaining to them should be exposed for several hours to out-door air, or to a high degree of heat, so that all effluvia which have been thrown off from the body and have found lodgment in the bed may be thoroughly removed.

In the workings of the complicated machinery of our organism the tissues are constantly wearing out, and a waste taking place. That our food and drink are used to rebuild the system is known to all, and the methods of their distribution are elsewhere given. During our waking hours the wear is more rapid than the repair, while in sleep the latter is the more active. It will then be readily understood why a loss of sleep is so exhausting, and why, after a wakeful night, one feels more tired than when he lay down. The wear has been going on all the time, and its effect

is weariness. One also sees the physiological folly of "economizing time" by shortening the hours of the sleep which the body requires.

The function of sleep will at once suggest the great importance of observing regularity in its enjoyment. No rule can be adopted as to the length of time required. Differences of temperament, indicating differences in the activity of the body's organs and in the changes in the tissues, present different demands for sleep. Diet, habits, occupations, and the like, also modify the time. Though from six to eight hours may be given as a safe rule, many preserve health and their natural activity on much less, a hard worker, especially in the professions, occasionally getting the needed rest in four or five hours. Children of course require more than adults.

The best time for taking sleep is unquestionably from early evening to early morning, say from nine or ten to four or six. The time before midnight is so conducive to vigor of body and freshness of looks, as shown in innumerable instances, that the hours from ten to twelve have been named the "beauty hours." Early rising is healthful, beyond a doubt. To be sure, proper precautions will be taken against excessive cold and dampness, with special pains to prevent undue exposure in malarial districts. One's vocation or temperament may call for sleep during the day, and, in general, when one is ordinarily busy, he should look upon such an inclination as a gentle warning of nature that the body needs rest, and yield to it when practicable.

It has often been urged that one ought not to sleep immediately after eating, but a short "after-dinner nap" is recommended by high authority, and experience certainly justifies it in some people. No fixed rule can be established as to this, for the system of one may demand what that of another may not need or even endure. The same general remarks apply to eating at night. While some are injured by taking food in the evening, others are unable to sleep under the slightest feelings of hunger, and should then not attempt to force themselves to it. That much wakefulness and illness are directly due to suppers at unseasonable hours there can be no doubt. That trouble also arises from the stated evening meal, *after two full meals previously on the same day*, is equally true. Yet, with a light meal in the midst of the day's business, or none at all, it is believed that an early evening dinner is rather more conducive to health and sleep than an arrangement by which the fuller meal comes in the middle of the day. One's experience in this in his best guide.

The sleeping-apartments should be located with the greatest care, being large, well ventilated and having if possible an eastern and southern exposure. As the air in the lower part of the house will almost certainly be loaded with impurities from its use during the day, it is not a desirable place

for the bed. The sleeping-room should be opened to the sun and air during the day and the clothes be thoroughly aired in the morning before they are spread. It is best to lie on the side, preferably the right. Lying on the back tends to too great heat in the spine and too much pressure on it. Use a pillow that will keep the head a little higher than the rest of the body.

CLOTHING.

The chief purpose of clothing is the protection of the body against the extremes of heat and cold and sudden changes of temperature. The more slowly a given material conducts heat the more efficacious is it for the purposes of clothing. Woolen fabrics rank first, and with them furs and the down of birds. Next are silk and cotton, linen being last. Color makes but little difference with regard to heat radiated from the body. When however the question is one of heat received, as from the sun, color makes a great difference and material very little; black being very much warmer than white. Loosely fitting garments are much warmer than tight ones, and successive layers than a thick one, two light-weight coats being warmer than a very heavy one, or two light undershirts than a heavy one.

Clothing should be permeable to air. The woolen underclothing, which every one should wear in winter, should not be too fine or close in texture, preventing the passing of the perspiration through it. Gauze underwear should be worn in summer; it guards against sudden chilling of the skin from profuse perspiration, by preventing too rapid evaporation. Linen should never be worn next to the skin; nor should the clothing worn during the day be allowed to remain on the person during the hours of sleep.

Not much can be said in favor of corsets as made at the present day. There are some however that are unobjectionable, notably those made after the style of a dress-waist, with broad shoulder-straps and appliances for supporting the heavy skirts, thus relieving the abdomen and hips. The most modern as well as the ancient æsthetic ideas with regard to the size of the female waist are truly commendable from a physiological standpoint, nature being allowed by sensible people to determine this matter.

FOOD AND COOKERY.

Our life-makers are the provider and the cook. We are in their hands, to make as they can or will; strong or weak, buoyant or depressed, active or sleepy, bright, quick-witted, or dull and torpid. No other human office has such control over mankind as that of the house-keeper and cook. A position that wields so much power can be well filled only by persons of

intelligence, appropriate culture, thorough discipline and experience; for it demands the exercise of talent and scientific acquirements. Elsewhere we have given directions for the preparation of food for the sick, with a number of valuable recipes. The limits of this work will not permit of a minute treatment of cookery as related to the intricate process of nutrition; suffice it to say that anything but the most casual attention given to the subject will convince any one of even tolerable intelligence that a startling influence is exerted upon the health and morals of mankind by the food we buy, and the methods of its preparation for the table. The provider and the cook, by their ignorance and unfitness, are responsible for much of man's distress, loss of power and early death. The dictates of the palate are, however, so agreeable that the well are slow to heed any rules laid down in books upon the question of their diet. Though the theme is important, and is usually treated at length in domestic works, detailed directions are well nigh useless here. When the reader becomes ill he will be ready to seek advice on diet—and he will find it in the article devoted to his ailment, and in the chapter on Home Nursing specific notes are given.

EXERCISE.

The physiological effect produced by muscular exercise is increased action of the respiratory and circulatory systems. By stimulating the respiration it rids the body of carbonic acid and purifies the blood. By increasing the action of the heart it quickens all of the vital processes throughout the body, renews the tissues and removes the waste material. When exercise is properly conducted, the effect on the digestive system is very marked. The appetite is increased and more food is demanded to supply the necessary force. This increase of appetite is especially noticeable when the exercise is taken in the open air.

When vigorous exercise is taken after a long period of rest, or by persons who habitually lead a sedentary life, more harm than benefit arises. Instead of the vital forces being quickened and the process of repair and removal being stimulated, they are brought almost to a stand-still by the blocking that occurs in the blood-vessels. Caution should always be used in changing from sedentary habits to arduous and exhausting labor. When exercise is undertaken without due preparation, or when the bodily powers are exhausted by fatigue, the ability to take food is sometimes diminished. It is of great importance, when great fatigue has been brought on, to see that the bodily powers are thoroughly recruited by rest before an attempt is made to take food. Indeed, it should be a rule that a period of rest shall intervene between work and eating.

Our climate, from its excessive heat in summer and cold in winter, prevents many from taking walks; but no amount of physical exercise indoors can compare with a daily walk in the open air. Especially is this the case when there are consumptive tendencies. The plea of bad weather and invalidism should not long be urged, acute illness being excepted.

Walking is the best form of exercise, as it brings into action more muscles than any other. Running is not always safe or prudent. Dancing in itself is not hurtful, but as generally indulged in, under the stimulus of modern dancing-parties, in over-heated rooms, and followed by exposure to cold, it brings a dreadful train of evils. Horseback exercise is good. It is more exhilarating than walking, insures a more rapid change of atmosphere, and is less fatiguing. Unfortunately society demands such an unnatural position for ladies, and such a dangerously long riding-habit, that for them not much can be said in favor of this fascinating exercise. Driving in an open carriage is excellent for invalids and convalescents. A carriage with curtains down at the sides and open at the back makes too great a draught for those who take cold easily.

Some of the light varieties of gymnastics may be of service, but the swinging of heavy clubs around the head cannot be recommended. For those whose muscles seem deficient in nourishment and are soft and flabby nothing is better than "movements." These one can take every morning and evening when divested of clothing, such as rotating the arms, and pinching and rubbing the flesh gently on all parts of the body. What the French call "massage" is excellent for those whose vitality is low.

ABUSE OF EXERCISE.

Exercise, like other good things, is in danger of being abused, as was hinted above. Those whose vocations demand much indoor mental work will do well, in the midst of so many appeals to cultivate their muscles, to keep in mind two points:—*First*, the sole object of exercise, merely as exercise, is the preservation of a healthy action of the several organs, or the restoration of the same when lost; *second*, a high muscular development or very vigorous exercise does not insure and may diminish a capacity for mental achievement. Brawny muscle is no more a sign of health than are well developed intellectual faculties. Deranged livers, stomachs and other organs are very frequently found in the most powerful frames. If one trains his muscular powers to a remarkable point, he may expect that some other part of his organism will be deprived of its due. Phenomenal strength in one locality almost certainly tells of weakness in some other. If one's daily duties require a special intellectual activity and development,

he can not reasonably hope to have also a remarkable strength of physique. No more, on the other hand, can a high state of mental culture be expected in the man who toils daily at heavy manual labor

Many serious mistakes have been made from a belief that intense mental labor calls for vigorous physical exercise. Those of sedentary habits have taken long-continued exercise after a day of arduous toil, to secure a buoyancy of feeling and to induce sleep, but have failed in both because the vital energies have been too much reduced by the day's duties to endure the further strain. In such cases a less amount of exercise should be taken, and if the desired results are not experienced, the mind should be relieved of some of its regular tasks. Though a fair amount of physical exercise is of the highest importance to those of sedentary habits, agreeable change in one's work is of almost equal value. Entertaining recreations for the mind should be diligently sought by those so engaged.

MENTAL RECREATION IN MANUAL LABOR.

The existence of health among those who are engaged in manual work is so generally assumed that their wants are too much neglected in remarks upon the subject of this chapter. Yet there is no doubt that such people, as a class, would have a better type of health if they would so order their duties that more time might be devoted to the exercise of the mind. Few have a just idea of the stimulating and toning effect that is imparted to the body in general by the normal action of the nervous system. It should be kept in mind that intellectual activity is highly conducive to physical health. If the energies of the body are kept drained by manual labor, the mental faculties will inevitably be deprived of their proper exercise, and be weakened if not destroyed.

It is a popular impression that insanity is quite peculiar to the professions. That this is not true is abundantly shown by statistics. Indeed, the greater numbers come from among the farmers, and especially *farmers' wives*. There is material for serious thought here. From previous remarks upon the abuse of exercise it is reasonable to expect impeded action of the mind and consequent irregularities in the body among farmers, artisans and day-laborers who apply themselves very closely to their toils. A loss of the mind's balance among the housewives of these classes might as reasonably be expected, for their condition is more aggravated. They are not only subject to taxing physical employments, but are kept constantly in the midst of the same surroundings, with much to produce a depressing monotony, while they have less to divert the mind than the male members of the family whose duties necessitate some variety of scenes.

This taxing state of the mind is the occasion of much of the decline and sorrow which are ever attributed to an over-worked body.

In view of the preceding remarks it is of the highest importance that the classes now under consideration insure to themselves some measure of mental exercise and recreation, as reading, excursions and other amusements. A form of recreation which is of great moment and contributes most liberally to the happiness of the whole household, and especially to the women of the family, is the adornment of the home and its surroundings. It is not necessary that this be expensive or elaborate, and such as is really essential is within the reach of all. Simple wall, table, floor and door-yard embellishments have an influence in stimulating the mind and spirits that is positively surprising. That they cultivate hope, good nature and happiness, being thus ready servants of domestic love, is a sufficient reason for securing them; but they are in addition the sentinels which drive off disease and save bills for medical care which often far exceed the outlay in their purchase. Every intelligent physician, knowing that the highest professional skill may be defeated by an unfavorable mental condition in the patient, always tries to keep those whom he is treating in the most hopeful and happy frame of mind, and thus testifies to the intimate dependence of bodily disease upon the state of the mind. *The normal action of the intellectual faculties and their proper recreations, along with pleasing adornments in and about the home, are invaluable elements in securing health, happiness, and economy in the household.*

THE AIR WE BREATHE.

Of the three chief requirements of physical existence, air, food and water, the one that must of necessity be constantly supplied is air, since life cannot be maintained without it. The normal components of air are oxygen and nitrogen, with a very low percentage of carbonic acid gas. Of these, the one essential to the support of animal life is oxygen. Nitrogen seems to act as a diluent to the oxygen, enabling it to be the more readily appropriated by the system. The carbonic acid gas is unnecessary to human life, but to the vegetable it is food, and with water often suffices to support the entire life of the plant.

The transfer of oxygen to the body is effected by the act of breathing, by which it passes through the lungs to the blood. By an equally easy change the blood gives off the oxygen to the tissues of the body and takes up carbonic acid gas, which is then thrown off through the lungs and skin and enters into the atmosphere. The normal proportion of gases in the air is thus changed, there being less oxygen and more carbonic acid.

This excessive carbonic acid gas, mixed as it is with more or less of organic refuse, should not be breathed; hence the necessity of ventilation, to procure a fresh supply of oxygen and to allow the poisonous materials to escape. Even after the poison has been removed from the air, it may "paralyze" the red blood-corpuscles, and thus induce suffocation. It is said that air is bad and improper for continuous use when it contains, in consequence of respiration and perspiration, more than one part of carbonic acid gas in a thousand, and that a good air for chambers, in which a person may remain for a long time in a state of health and comfort, contains not more than .07 of a part in 1000. This statement must be qualified by the implied condition that the carbonic acid is derived from respiration. The poisonous element in badly ventilated places is now fully understood to consist, not of carbonic acid alone, but of the organic compounds which are given off simultaneously from the lungs and skin.

It follows from the foregoing statements regarding the necessity for good air that we must know something about ventilation. Few people have the opportunity of building a house, of choosing the site, or in any respect influencing the surroundings; yet the business of life compels most of us to live in some particular locality and to take the soil, air, water and houses of that locality as we find them. Something may be done without great expense to improve even the most unhealthy place. The first most natural means of ventilation is the opening of windows. A window opened an inch at the top and the same at the bottom makes very good ventilation without much draught. It is an error to suppose that, because carbonic acid gas is heavy, the air rendered foul by respiration and combustion tends to the floor. If the gas were pure, it would, as the simplest kind of experiment shows, be heavier than air; but when diluted and heated it mixes with the air and is only to be separated by the operation of chemical or vegetable agencies. In general, if the air to be admitted cannot be warmed, it should be admitted eight or ten feet from the floor and be directed upward; if warmed at the bottom, outlets can be made at any point.

Cheap heating implies poor ventilation. In the temperate regions, where the mercury ranges through the year from ten degrees below zero to one hundred above, artificial heat must be supplied for six or seven months of the year, with occasional fires at all seasons for cool mornings and evenings. It was a sad change and a most questionable improvement when the open and capacious ventilating fire-places of a former day gave place to air-tight stoves and almost air-tight apartments. If it is one's misfortune to occupy a house in which there are no aids to ventilation, such as open fire-places, valvular ventilators, or any of the best modern contrivances for securing a supply of pure air, he can certainly open the windows and keep

them open night and day. It has been thought by some that a large and high room does not need ventilation. The only permanent advantage of great space lies in the fact that we can ventilate freely without giving rise to a perceptible draught.

The air of small rooms, where one or more persons are always present, must be impure unless a fresh supply is frequently admitted. It should not be supposed, because one does not suffer direct inconvenience, that the air is of sufficiently good quality. Think of small apartments heated during cold weather with stoves, great care being taken to exclude the air as though it were an enemy instead of a friend! Is it surprising that indisposition is so often experienced? There may be oxygen enough to sustain life, it is true, but the majority of the human race live at a "poor dying rate," when they might by a little thought and care be typical specimens of health. Air which is changed rapidly may be permitted perhaps to contain a relatively larger proportion of carbonic gas. In railway carriages, for example, the air may be considered pure and good as long as it does not contain more than ten parts per ten thousand of the gas.

THE WATER WE DRINK.

Water makes up two-thirds of the body. It is constantly passing out of the system through the skin, lungs and kidneys, either as a vapor or a liquid, there being through these channels an annual loss of about two thousand pounds. We can thus arrive at some idea of the amount required to be taken into the body, for the maintenance of health makes it necessary that the compensation be equal to the loss. Since so large a portion of the body is made up of water, it is easy to understand that health and disease are largely dependent upon its purity or impurity.

The careless drinking of ice-water is frequently attended with injurious results. This is especially true when the person is in an overheated condition, because at such a time severe gastric derangements may be produced, and occasionally serious nervous disturbances. It has been taught by physicians until recently that drinking freely of any fluid during meals is a common cause of dyspepsia. But now physiologists agree that it is proper to drink as thirst requires, if only mastication be slow and the mixing of the saliva complete. To quench thirst, water should be comparatively pure, as well as palatable. The absolutely pure distilled water does not answer the purpose of a drink. A moderate amount of earthy salts is beneficial. Rain water is healthful, but it is only in exceptional cases that it can be procured in anything like a pure condition. The atmosphere is loaded with organic matter and the roofs from which it is col-

lected are usually dirty. Again, after the exclusive use of rain-water for many years, there is a diseased condition that may be traced to a lack of earthy salts.

The effects of drinking impure water differ according to the polluting material. An excess of mineral substances may produce dyspepsia and constipation. Gravel and calculus are more common where an unusual amount of lime is contained in the drinking-water, and headache often attends the use of that which contains iron. Lead pipes used to conduct soft water may cause lead-poisoning, for as small an amount as one-tenth of a grain of lead to the gallon is injurious. Probably the worst pollution comes from animal matter, especially that which is found where a cemetery is between the original fountain and the place of consumption.

Our water-supply is derived from springs, wells, lakes and rivers. Deep wells and springs, as a rule, furnish better water than shallow ones. These vary in excellence according to the geological formation of the district where situated. Even springs and deep wells become polluted from surface drainage and through fissures in the rock in which they are located. In crowded localities shallow wells are never safe. The ground becomes saturated with filth from adjacent cess-pools, privies and drains, and the use of the water is attended with danger. Rotting animal matter converts drinking-water into a deadly poison. The principal diseases known to arise from water that is contaminated with such organic matter are diarrhœa, dysentery, cholera and enteric fever. Typhoid or enteric fever is the household fever of our country, and is known to be a special product of decaying human excrement, the most frequent method of infection being from water-pollution.

When water is obtained from public supplies it is exposed to pollution either at its source, or from defective mains, or from imperfect plumbing, the most common pollution at its source being the sewage of cities and towns. Large bodies of water lessen the amount of pollution in a given quantity, but even then there is danger. The public water-supplies of cities on our great lakes show that the procuring of the water at a point several miles distant from the outlets of sewers is not an absolute guarantee against organic matter, for when the wind blows continuously in a certain direction it carries the sewage along with the current.

Foul reservoirs are also a source of danger, as well as leaky mains in close proximity to sewers, for intercurrents may be set up and carry the contents of the sewers directly into the water.

Where there is any doubt about the purity of the water it should be filtered and boiled, then cooled. An almost inconceivably small percentage of poisonous matter has been known to produce very grave results, so that

the strictest precautions will not only be wise but will avert the danger of many forms of disease and suffering that arise from unsuitable water.

DRAINAGE, PRIVIES, ETC.

A topic that is so closely related to the health and comfort of the household as drainage should not be left to the exclusive study of architects and engineers. Every one should have some knowledge of the sanitary requirements of the family. That many diseases are due to removable causes connected with the construction and arrangement of the dwelling and its immediate surroundings, there can be no doubt. Country houses, farm-houses and laborers' homes are not less subject to sanitary criticism than are those of the wealthier class in crowded cities. Yet their defects are mainly of a different character and relate more to the condition of the cellar, the grounds about the house and the water-supply than to the arrangement of the interior drainage. In point of fact, such houses have no drainage at all, and the country physician derives his chief support from the condition consequent upon this fact.

It is not necessary to accumulate evidence as to the fatal effect of prevalent carelessness and filthiness in the cellar and in the soil about the house, for nearly all deaths from typhoid fever in the country are traceable to the use of poisoned water from wells situated near barn-yards or privies. The action of poisoned water is not as sudden and direct as that of a well-aimed rifle, it is true, but it is scarcely less certain, sooner or later. Diphtheria and like diseases are not afflictions sent by an inscrutable Providence for some hidden purpose of discipline, but are simply results of the unvarying operation of certain laws which govern disease and health, striking both the just and the unjust without distinction, only awaiting the due coincidence of conditions. A wet cellar is dangerous and is to be in all cases avoided, abandoned, or supplied with a little drain or ditch dug from its lowest point. This observation is of pressing importance.

In a country house not a hundred miles from a great city the weary, stifled dweller of the metropolis is invited to rest under the cool shade of the beautiful trees; the house is the home of a wealthy farmer, and, although large, is almost lost to sight, hidden by the dense foliage of the wide-spreading trees; the house is on ground lower than the surrounding surface; the cellar in the autumn is filled with vegetables and fruits that decay more or less; the cellar walls are always damp; to prevent freezing in the winter there is a temporary embankment of straw and manure all around the house two or three feet high. This cellar is seldom cleaned, that is, it is not thoroughly done. There is not a month in the year in which some member of

the otherwise prosperous family is not ill, and there are two chronic invalids. Is it any wonder?

The modern system of sewerage in our large towns, while perhaps better than nothing, is oftentimes a covert enemy, all the more dangerous because hidden. People spend millions of money to convey the foul debris of a city through underground channels because they fear the pollution of the air they breathe; yet with all ingenuousness they establish communications between these repositories of deadly filth and the apartments of their dwellings through stationary wash-stands, bath-tubs and other pipe-appliances. "What shall we do about it," asks one who has read much and heard more concerning the crying evil of defective drainage. If one is fortunate enough to control the building of his own house, he should employ the most skillful architect and plumber. Water-closets and bath-rooms should be as remote as possible from all living-rooms and sleeping-apartments, and should be provided with ventilating pipes that extend above the roof of the house. The old-fashioned washbowl and pitcher are preferable to the stationary wash-basin which is connected with the sewers.

Dry-Earth Closet.—Having spoken of some special points of more immediate importance to those who live in cities, it is here in place to treat of one of the most common and repulsive sources of pollution in the air, soil and water on the farm and in the smaller towns—the privy. Only in exceptional cases is commendable wisdom evinced in its location, construction and care. More commonly the excrement is deposited on the surface and accumulates and ferments until it is offensive and injurious in the extreme, and the soil is thoroughly impregnated with active poisons which find their way into wells and cisterns, to say nothing of the noxious odors with which they load the air. Less often we find vaults used as a means of hiding the excrement from sight and saving the labor of frequent removals; but they contaminate the atmosphere none the less and poison the soil and water-supplies more effectually. Either kind of privy is bad enough, and is productive of unpleasantness and disease. Those who have wind-mills and a tank can easily provide a water-closet, the best arrangement of all; others we would advise to avoid vaults and make a dry-earth closet, which will be found cleanly and easily managed.

We adopt a description found in the annual report of the State Board of Health of Wisconsin, presented by Professor Henry as a narrative of his own experience. He took an ordinary privy, elevated it two feet from the ground, the sides and front resting on a strong foundation, the back part being entirely without foundation. The old vault was filled up with fresh earth, and all odors were thus destroyed. Next a strong tight box of two-inch pine plank was made to hold the droppings and dry earth. The sides

were twenty inches high and the bottom sixteen inches wide. It was twenty inches wide at the top, which was left open. This box was placed on two runners made of scantling about five feet long. These runners projected about three feet in front of the box, and at the extremities of the runners and above a cross-piece was bolted, to which, by means of double-trees, a team could be attached. The whole when completed resembled somewhat a very wide, short sleigh on low runners. Under the privy two planks were placed to support the runners when the box was slid in so as to be directly under the seat. When thus shoved under, the box completely closed the opening at the back of the building. The next step was to prepare a receptacle for dry earth. This was accomplished by making a box inside the privy, long enough to hold several bushels of earth, and placing it in a corner against the wall so as to be filled through a small door cut through the side of the building. The bottom of the box was placed more than a foot above the floor and was provided below with a spout through which the dry earth could run into a low box. A common dipper to handle the earth with completed the arrangement. At first dry earth, taken from the road during dry weather, served an excellent purpose. At present, the earth is prepared by spreading fresh soil over boards, laid on the ground in the wagon-shed a couple of months before being needed. Experience has shown that a small dipper full of earth after each sitting is amply sufficient to keep down all odors. When the box becomes full, a team is hitched to the cross-piece before described, and it is drawn to the field, where it is dumped by unhooking the team and two men lifting at the runners.

It will be seen that this method of disposal is simple and inexpensive. In the whole process one does not encounter as much odor as in remaining in the ordinary privy five minutes. It is pre-eminently practical on the farm, as any privy can be so located as to be approached by a team from the rear. The box to be placed below the seat can be made by any farmer-boy having ordinary skillfulness in the use of the saw and hammer. Instead of the box for holding the dry earth as described above, a barrel might be used. The dry earth should be fine and as free as possible from sticks and stones, if it is to run well through the spout into the box described. The amount of earth necessary for the purpose is far less than one would suppose who had not tried this system. Of course, to succeed some one must have an oversight of the affair and a little daily attention is needed, as there are always careless persons about, whose habits are not at all creditable, but the attention required is usually quite small.

The same writer very wisely suggested that there be two privies on the farm. One should be located at the barn and convenient for those working there morning and evening. The best location for that designed

for house-use is in the woodshed, which should be attached to the house. By so placing it, it is accessible at all times without that exposure now so universally forced upon all the household during inclement weather.

HEREDITY AND MARRIAGE.

Heredity, or the tendency in living beings to transmit to their descendants one or more of their own characteristics, is a subject of profound interest and importance. Its discussion is most intimately connected with that of hygiene, since it involves the consideration of those elements of health and disease which exist prior to birth. High scientific authority pronounces it "an ascertained fact" that the germ in the womb contains "not only the anatomical structure of the individual that is to spring from it, but also his temperament, character, aptitude, sentiments and thoughts. The parents place in this molecule the future of an existence which is nearly always the counterpart of themselves physiologically, oftentimes pathologically, and in many instances psychologically."

That there is a very general, though not universal, transmission of physical traits is demonstrated in the innumerable instances of "family resemblances," in the form, the facial features and expression, the color of the eyes and hair, the muscular strength, the gait, and other movements. One family is often cited in which for several generations the offspring had six toes in place of the almost universal five, and many other remarkable examples of transmitted physical traits might be adduced. Even peculiarities of body produced by scientific experiments upon the lower animals have left their traces in the offspring. As eminent a man as Professor Agassiz has mentioned instances in which marks from surgical operations have been transmitted. These effects of mechanical agencies only emphasize the natural tendency of the body.

The inheritance of physical resemblances we are wont to regard as perfectly natural; but we do not act the rational part in lightly esteeming the hereditary consequence of disease. "This much is certain," says an author above cited, "that the fatal character of hereditary diseases is a great and mournful fact, of which they only are fully and sadly conscious who have daily to witness its consequences. One must see the premature infirmity, the long-continued suffering, the irreparable catastrophes, the slow, cruel tortures, to which parents oftentimes condemn their children, to form a judgment of the power possessed by the demon of disease which lurks in the depth of their being." That one who suffers is liable to entail the same suffering upon his or her offspring is a matter of startling moment and demands the soberest thought.

There is as conclusive evidence that scrofula, tubercular consumption, gout, cancer, tetter, and other diseases, are transmitted as that the stature and features are, though the instances may not be as numerous. No other diseases, however, are so frequently inherited as those of the nervous system. It is a matter of frequent remark that insanity is inherited, and the thoughtful regard with apprehension the advent of a child of an insane parent, or of one in a family in which the taint is found. Many physicians estimate that one-fourth of all insanity results from heredity.

The tendency of nervous disorders to perpetuity is shown by the diversity which they assume. Insanity, for example, may be handed down in the form of epilepsy, St. Vitus' dance, idiocy, hysteria, hypochondria, or these may in turn transmit insanity. Nervous disease or exhaustion may show its effects in degeneracy of body or general eccentricity of organism in a succeeding generation.

Whether an appetite for alcoholic drinks and narcotics may be inherited has been freely discussed. Whatever may be said as to a real appetite, there can be little or no reasonable doubt that the continued use of alcohol, tobacco, opium, and like stimulants, often produces such a deficiency of vital forces in the offspring that an innate desire is felt for something to supply an undefined want. The use of the stimulant will be more readily acquired in the child because of this inborn degeneracy, though it has not been proved that some other stimulant, if first tried, may not as readily be taken up as a habit. That the descendants of those who are addicted to the use of such poisons are often epileptic, insane, idiotic, or otherwise afflicted in the nervous system, is a fact too well attested and too sad in its aspects to arouse anything less than the most sober thought and, in many cases, the most abject humiliation.

Extreme exhaustion of body may also show its effects in a second generation. However complete the health of the parents, if either of them has been subjected to long-continued and taxing physical exertion, the result of the undue strain on the vital powers will manifest itself in an enfeebled constitution of the offspring. This may be particularly said of the children of an over-taxed mother. The second generation may appear complete in body, while essential weakness is evinced in a lack of endurance and persistence. This remark will offer a just defense for many who are rebuked for not exercising that which they never had. One generation can not expend more than its due proportion of energy without robbing its posterity.

While heredity in the body is noticed by even a moderately careful observer, it is scarcely less apparent in the mental faculties. Thousands of instances of superiority in the arts and sciences are traceable to this ten-

dency. The Bach family, eminent in music for two hundred and fifty years, is often mentioned as an illustration, while noted men in the natural sciences, mathematics, astronomy, statesmanship, and other domains of thought, are very often the descendants of those who stood high in the same fields. It has been maintained, too, that "imprudence, penuriousness, dishonesty or good judgment persists as much as the familiar eyes or nose." Good and bad traits equally tend to permanency and growth in descendants; what a parent has gained appearing as instinct in the offspring, with greater or less exactness according to the influence of associated agencies, such as the traits of the other parent and the opportunities and demands for the exercise and development of the transmitted acquisition. It has been urged that this supposed heredity is simply the result of imitation and education. This is fully met by the fact that the same traits assert themselves even when the child in infancy has been removed from the parents entirely and subjected to influences not favorable to the hereditary tendency.

Because eminent poets, artists and scholars have appeared without an ancestry distinguished in the same fields, and have left descendants of either moderate or inferior qualities, there is a diversity of opinion as to the potency of heredity in the mental faculties. That in the mind the law is not so uniformly visible in its effects as it is in the body there can be no doubt. One might anticipate this, however, prior to investigation; for it is only the higher activities of the intellectual powers which arrest the attention in this matter, and they are always the result of more or less education or training. Heredity in them, therefore, insures only the *capacity* to become exceptional and thus notable, while physical likenesses are from their nature apparent to the eye from the beginning.

The *fact* of the transmission of mental faculties is not questioned; the difference of opinion is upon the extent of its manifestations. The same remark applies equally to moral qualities. It has been shown by various independent examinations of statistics that families have for successive generations been marked by dark lines of theft, murder, lying, sensuality, and the like, while others have been as noted for virtue. The perplexities in the study of this kind of inheritance are as numerous as those concerning the mind, and doubtless more so. We do have instances of immoral offspring from the most upright parents, but it is obvious that in such cases the universal desire is to conceal any immoral tendency in the ancestry. On the other hand, virtuous men and women rise from the level of immoral ancestors, but the public is less interested in the ancestry of such, and the line is less accessible to investigation.

What shall we conclude from the facts before us? That the descend-

ants of those who are diseased in body, mind and spirit will inevitably be similarly afflicted? Certainly not, though this is the logical conclusion from the words of some extremists. "That hereditary influences make their mark in predispositions, in fixed tendencies, it were unscientific to deny; but yet it would be inexact to pretend that they implicitly contain the future states of the physical being, and determine its evolution." In this temperate manner M. Papillon uttered a protest against looking upon heredity as a fatality. The "evolution" or final outcome of predispositions and tendencies is largely under the control of training and observance of a proper hygiene. By such means the development of transmitted disease may often be prevented, and when one knows that he is predisposed to such, he should make his case a subject of calm study, and adopt means of arresting its advance. It is his solemn duty to take every precaution against imposing his disorder upon others, even if that implies the smothering of the fondest anticipations of parentage.

With the facts before one it is certainly reprehensible to beget offspring without carefully considering what, in the light of the knowledge he has, may be reasonably expected. It is not urged that physical perfection should be a necessary condition to the enjoyment of progeny, for such perfections do not exist. But may not one be held to a sober accountability who, afflicted with a known disorder, joins himself, in the prospect of issue, either to another with a similar ailment, to one who is known to be so predisposed, or to one who is notably weak in other important particulars? Such a duplicating of tendency greatly increases the probabilities of hereditary diseases.

Unborn generations who have no will in entering upon existence have claims which are entitled to the most pains-taking respect. It is not enough that one surrender himself to the fascinations of his sensibilities, with a resolution, in compensation, to correct by hygienic observances and education any ill effects which may arise—and which he had it in his power to avoid. That such observances and training can do much there is no question, and it is a most gracious and beneficent provision of the Creator to give the means of partially atoning for violations of the past. But what of those violations which are committed with the facts understood? Is one accountable to his posterity for them? Is it one's right to form such alliances in response to impulses of sentiment, however noble in themselves, when his judgment foresees probable misery as a consequence?

It will be asked whether, in the ordering of the marital relations, these facts should have an important influence, and ever counterbalance the inclinations of the heart. Why not? Is it true that, of all of God's creatures, the only one not needing care and judgment in propagation is the

highest of all—man, who can suffer most or be most happy from the bad or good results of heredity? He doubtless does the part of wisdom who makes his calmer reason an arbiter in the decision of a question of so much moment to himself and his fellows. Every child has an inalienable right to be well born. For pecuniary reasons man takes great pains to secure quality and soundness in the animals which serve him, but he too often leaves to the unaided promptings of the heart the founding of the temple in which is to dwell, perhaps in impurity, disease, and consequent misery, the divine part of posterity. The growth and activities of the soul and mind depend very largely upon the condition of the body in which they dwell.

Those who shall heed these remarks and weigh the facts of nature given above should know that *heredity follows family lines*, and is not confined simply to parent and child. A hereditary trait often disappears in a second generation, but comes up in a third or later one, a fact which explains the phenomenon of a greater resemblance between uncle and nephew, or between two more remotely related, than between parents and children. Hence, in considering the matter of hereditary tendencies of himself and of others, one should study the history of the families concerned as far as practicable. It should also be kept constantly in mind that a disease in one generation may afterward appear in another form.





PART II.

THE HORSE AND HIS DISEASES.





DRAWN FROM LIFE BY L. F. GAGWIN.

83. MAUD S. (Record, 2:00 $\frac{3}{4}$.)

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PART II.

THE HORSE AND HIS DISEASES.

INTRODUCTION.

BY LEROY F. CAGWIN, ESQ., JOLIET, ILL.

THE PREHISTORIC HORSE.

FOSSIL bones of the horse have been found in both hemispheres together with those of other animals which indicate an antiquity as great as any fossil quadruped. The relics found in Europe in the bone caves and drift deposits consist of innumerable skeletons as well as representations by drawing and carving on reindeer horn, bone and ivory, executed by their contemporary man countless ages before history began. Ecker says that the European horse of the fourth epoch probably gave birth to the small stunted breed with the large head, rounded forehead and short neck, which is found in fossil remains at Solutre and is still represented by the wild horses of the Rhone delta and the steppes of Russia; but he adds that this primitive breed was almost entirely supplanted by an Asiatic breed larger and more robust, and that our domestic horse is the result of a mixture of the two. The problem of the origin of the horse can no more be solved than that of man; unless we assume the unity of species, and that the Great Architect created each kind in a specific mould at the beginning, subject to the law of variation, limited by the power of reproduction each of its kind, that man, animals and plants had attained a degree of perfection in variety at some period or periods in the remote past, and that the process is now going on, slowly recovering from the great inundation which overwhelmed the earth during the glacial epoch.

THE HORSE IN HISTORY.

Traces of the horse have been found in nearly all ages and all countries since the flood, the period at which history seems to have dawned. From time to time as the exigencies have demanded varieties of the horse have been produced suitable for the purposes required of them. In following the march of civilization from the very first, the finer breeds appear to have been maintained by the introduction of the Arab stock. Egypt, the most ancient of civilized monarchies that have left monuments to tell their history, as we gather from Rawlinson's "Ancient Egypt," introduced horses, probably from Arabia, under the eighteenth dynasty, and they seem not to have been known in the earlier times. They were regarded as too noble and perhaps too valuable for draught and agricultural purposes, like the ass and the ox, but were commonly either ridden or employed to draw curricles and chariots, chiefly by men of the upper classes. Great numbers were required for the chariots and cavalry. A brisk trade was carried on with Syria and Palestine where they were in great request and commanded high prices. It appears that they were not allowed to graze in fields but were kept constantly in stalls and fed on straw and barley. They seem to have resembled the Arab stock, being light, agile and high-spirited, and were probably introduced into Egypt by the Hyksos.

The same class of horses apparently figures on the monuments of the ruins of Nineveh, Babylon, Assyria, Persia, and other ancient oriental countries, while later, toward the decline of the Persian Empire and the rise of the Grecian, and about the time that the horse was beginning to be cultivated in Europe, the cavalry and war horse was stouter, of heavier quarters and limbs, drooping more at the croup, and altogether of a stockier mould and darker color. Peering into the realms of fancy we can weave a picture which the insufficient light of history can not satisfactorily complete. We can perhaps see the relation and conclude that the parent Aryan stock of the Caucasian civilization was the original possessor of the fine breed of horses known to oriental countries as the Arab, the white albinoish color and the refinement and symmetry peculiar to both going far in evidence.

The great epoch in the history of the horse is at the time of the rise of the Indo-Germanic nations. Spain before England was the nursery of the fine blooded horse. The northern countries supplied the ponderous horse used for war. The cavalry of the time, requiring the heavy armor for both rider and horse, created the necessity of a heavy animal, and to this fact we are indebted for the introduction of the modern draught horse about the time of the Norman conquest.

From that time the variety of purposes to which the horse has been

found useful has given rise to all the so-called breeds, such as the draught horse, thoroughbred race horse, hunters, cobs, hackneys, coach horses, saddle horses, trotters, pacers, buggy horses, ponies, and others, the fashion continually changing so that new breeds are coming forward and old ones falling out; but none of these necessarily become obsolete, as they can at any time, if fashion demands, easily be cultivated to a standard in a few generations.

THE MODERN HORSE.

Presuming that the perfect horse combines all the possible requisites after the original design, we may further state that individuals of the species are subject to variation, so that no one animal combines all qualities in perfection, and no two are exactly alike, the physiological causes of which will be discussed under their respective heads. The classification that appears most suitable comprises four groups, namely: The Primitive, the Refined, the Varied, and the Common or Domestic.

The Primitive.—The primitive stock, now found as a type in the high latitudes, is most nearly identical with the prehistoric horse. Left to their own resources, without domesticating influences, these are small, tough and hardy, of round build, large heads, short, heavy necks, sturdy limbs, dark and shaggy coats, familiar to all who are acquainted with the Shetland ponies, or better, with the old French and Scotch.

The Refined.—This class is typified in the Arab horse of ancient and modern times. The white, gray, and delicate lighter shades are an index of their refinement and purity; their artistic mould, the superb design of their proportions, and the exquisite carving of their form being very suggestive of antique statuary, there being a marked contrast to the more sturdy northern horse.

The Arab of ancient history is finely represented in bas-relief in the ruins of Konyunjik, as we learn from Layard's "Nineveh and Babylon." A satisfactory description of the modern Arab also appears in the same work, from which we gather that great attention is paid to pedigree, it being the first consideration. Arabs divide their thoroughbred horses into five races, descended, as some declare, from the five favorite mares of the Prophet. The greatest number now, as formerly, is to be found in Mesopotamia and the great plains watered by the Tigris and Euphrates. The best are probably those of the Shamas and Aneyza tribes.

The Arab horse is remarkable for its exquisite symmetry, united with wonderful powers of endurance, rather than for extraordinary speed. Their color is generally white, light or dark gray, light chestnut, or bay, with white or black feet. Black is exceedingly rare, and Mr. Layard never



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34. DEXTER

remembers to have seen dun, sorrel or dapple in the true-bred Arab, and when these colors occur the breed has been crossed. Their average height is fourteen to fourteen and a half hands, rarely fifteen, but they have great strength and courage for their size. Their most remarkable power is manifested in an ability to perform long and arduous marches upon the smallest possible allowance of food and water. In consequence of such labor they are lean, unsightly, and therefore disappointing to travelers who rarely see them at their best in the freedom of spring pastures, where they are sleek, and indeed beautiful. The Arab has but two paces, a quick and easy walk, averaging four or five miles an hour, and a half-running canter. They are fed on camel's milk, dates when they can be had, and sometimes flesh. They are rapidly deteriorating. They are shod with a circular shoe which covers the bottom of the foot except a small hole, and which is fastened on with six nails. [Nineveh and Babylon.]

The Varied.—This class is the product of the union of the two previously mentioned, or may be produced as a freak without regard to breeding at all. The laws of breeding have a wide field of operation when these opposite forces combine. The modern varieties of the horse seem in most all cases to trace their origin to this system of violent crossing. Even the French draught horse, the mighty Percheron, is stoutly claimed to be a descendant of the Arab; but it is plain that its stocky shape and heavy head, neck and mane never came from that source; so that it is probable he has the elements of both, and it is not beyond the range of probability that these were the prime elements, resulting in the first instances as a freak of nature, which cultivation and selection have at last succeeded in reducing to a standard breed. It has been claimed that the Clyde draught horse originated from the Shetland pony; yet we see evidence of eastern blood in the white markings noticeable in this breed of horses. The English race horse is another instance, although he leans very much more to the Arab; still evidence of a northern character may be seen in his stouter, more arched back, and general bulk of bone and muscle. We could thus analyze others, but this brief statement will suffice.

The Common or Domestic.—The last classification shows the gradual diffusion of all the elements until they constitute an animal furnishing all the requisites of the horse in general and none in particular, much as we oftenest see him in every-day life and in daily use, ready to gallop across the country under the saddle, to drive in the light buggy, useful for the plow, the team, or the cart, for every one in fact, and for every purpose. It would evidently be impracticable to give an analysis of this group. It is only in comparatively few instances that two individual animals have even the same blood.

THE THOROUGHBRED HORSE.

The blooded horse of the present age is best known as a type in the English race horse. The founding of the stud-book has led to the formation of a race that in perpetuity of quality is not inferior to the Arab, and in other respects superior. In delicacy of organism the Arab is still the standard representative, although the English horse is sufficiently so to lift it above the varied class. The admixture of thoroughbred blood with the cold-blooded horses of the north will however produce the same phenomena as the Arab produces.

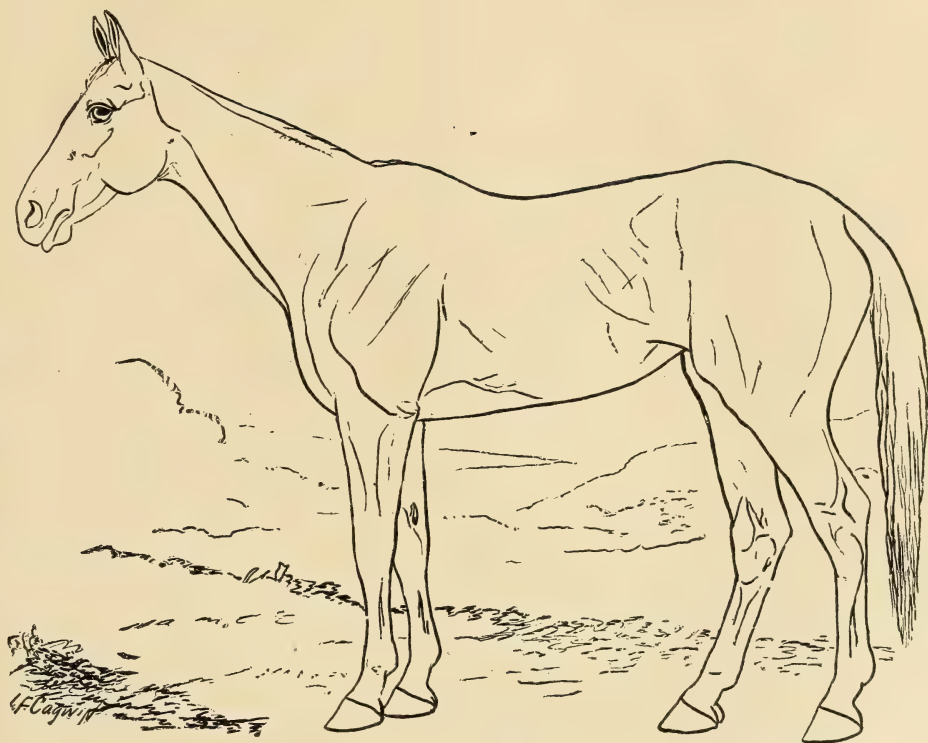
Though the distinctive breeding of horses entitled to a place in the stud-book is Arabian, the best and most lasting results are traceable to but very few. In fact, three horses have given us the majority of all the recognized thoroughbreds at this time, and their lines have been handed down through celebrated individuals, while all others have been lost to view. The three horses of Arabian blood which thus figure so largely in founding the race were the Darley Arabian (imported from Aleppo), the Byerly-Turk, and the Godolphin, *supposed* to be a Barb or Arab. The lines of breeding from these are respectively known as the Darley line, the Herod line (Herod being the main branch of the Byerly-Turk descent), and the Godolphin line.

Numerous other Arabians, Barbs, Turks and Spanish horses lent their influence in strengthening the race, but in a comparatively subordinate degree, and their names are to be found in the more remote crosses of tabulated pedigrees, so that this triple division may stand.

THE DARLEY LINE.

The celebrated Flying Childers gave prominence to the Darley Arabian by virtue of performance, although another son of the Darley and a full brother to Flying Childers, called Bartlett's or Bleeding Childers, perpetuates the fame of his sire in the male line to a greater extent. The Darley was a light bay, with three white feet and a snip. The principal value of his line is its quality of producing game and lasting race horses, the more so if they take on the character, color and marks of their famous founder.

This line is held to be the most valuable of the thoroughbreds. Flying Childers, by the Darley, was a bay, with four white feet and a snip, was fifteen hands high, and is accounted by some to have been the swiftest and best race horse ever known. He is best represented in the male line through his sons Blaze and Snip. But the grand current of succession is through Darley, Bartlett's Childers, Squirt, Marske, and Eclipse, in the order named. Childers' dam was Betty Leeds; Squirt's dam a Snake mare (a



85. LADY THORN.

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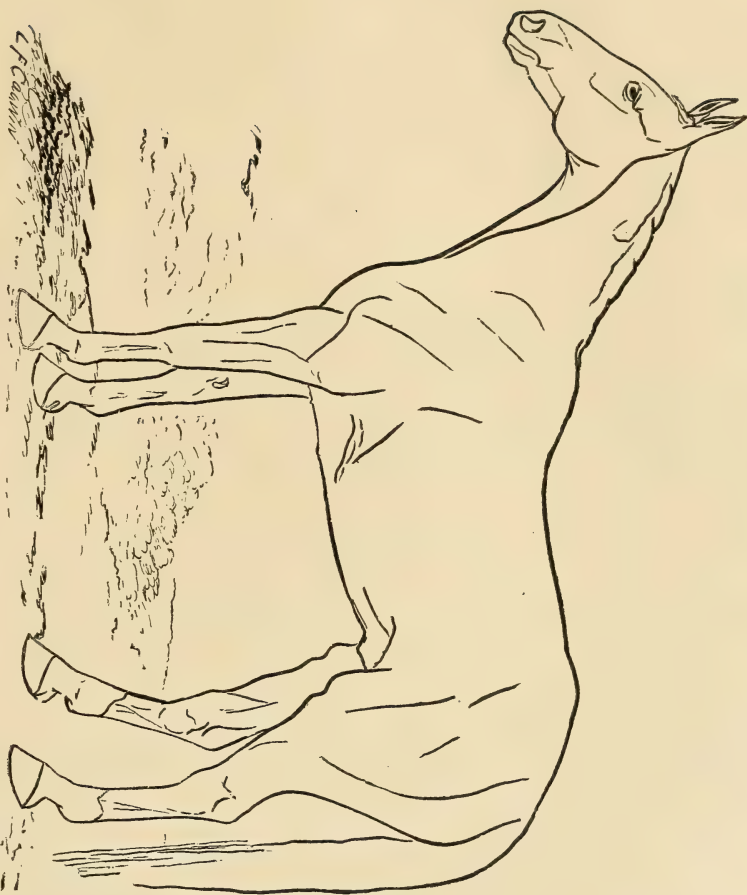
half-bred Arabian); Marske's dam, by Blacklegs, by a bay Turk, second dam by Bay Bolton, third dam by Foxcub, his dam by Leeds' Arabian; Eclipse's dam, Spitella, was by Regulus, by Godolphin, second dam of mixed blood through the Bald Galloway. Squirt was a chestnut, Marske a brown, and Eclipse a chestnut.

Eclipse, the principal perpetuator of the Bartlett branch of the Darley line, was as phenomenal in form as he was as a racer. He was sixteen hands high, and much higher over the croup. The hind cannons were very long, and the fore cannons very short, and for this peculiarity he was condemned as deformed and unfit for racing purposes and sold, but afterward his extraordinary success in vanquishing every competitor with ease, in fact distancing a field of the best racers of the day, led to the adoption of the Eclipse pattern for race horses. He also had very oblique shoulders, high whirl-bones, massive thighs and a deep chest. He was the sire of three Derby winners, Young Eclipse (1817), Saltram (1783), and Sargeant (1784), and one Oaks winner, Annette (1787). His blood in the male line is through his sons Pot 8 os, King Fergus, Jo Andrews and Mercury.

Pot 8 os' dam was by Sportsman, by Cade, by Godolphin, with back-cross of Darley. He had three Derby winners and one Oaks; he also had one St. Leger winner, Waxey, whose dam Maria was by Herod, the main artery of the Byerly-Turk line, with remote strain of Darley through Blaze, by Flying Childers. With this combination of blood Waxey is termed the "ace of trumps" of the stud-book. He was sire of Pope, Whalebone, Blucher and Whisker, all Derby winners. Whalebone, the best, had two Derby winners and one Oaks, all bays. The branches of his family were through his sons Camel, Defense and Sir Hercules. Camel was sire of Touchstone and Sir Lancelot, St. Leger winners. Touchstone united through his dam fresh strains of the blood of Eclipse, and was sire of Derby and St. Leger winners. His son Surplus won both for the first time in forty-eight years. Orlando, a bay with white nose and hind legs, by Touchstone, was the most distinguished as a producer, and his best son was Tiddington, a horse which measured but sixty-three inches in girth. Newminster, by Orlando, was more successful in the stud. Adventurer, by Newminster, begot Pretender, winner of the Derby in 1869. Hermit, the greatest of English sires, is a son of Newminster. Sir Hercules was the sire of Birdcatcher, sire of the Baron, sire of Stockwell, one of the most fashionable of English sires.

King Fergus, the second of the four great sons of Eclipse, founded two branches of his line through his sons Hambletonian and Benningbrough. From the former came the Blacklocks, and from the latter Emilius, Priam, Plenipotentiary and Muley Moloch, the sire of Alice Hawthorne, dam of

80. ST. JULIEN, (2:11 $\frac{1}{2}$).



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Thormanby, a Derby winner (1860) and one of the best of modern sires. Benningbrough, a bay, was sire of Orville, also a bay, sire of Octavius, Emilius, Margrave, and Muley, sire of Little Wonder and Muley Moloch. Emilius, by Orville, begot Priam (imported to the United States), a chestnut, and Plenipotentiary, a chestnut, both colts and Derby winners, though neither was very prominent in the stud. Hambletonian, son of King Fergus, begot Blacklock from an inbred Pot 8 os mare. Blacklock begot Hetman Platoff, Derby winner of 1847, and Voltaire, sire of Charles XII., and Voltigeur, Derby and St. Leger winners of 1850.

Mercury, a chestnut horse, son of Eclipse, dam by Tartar, begot Go-hanna, a bay horse, sire of Catton, sire of Derby winner of 1835, and our own imported Trustee, sire of Fashion and the twenty-mile trotter Trustee.

The last of the Ecliptic quartette, Jo Andrews, a bay horse by Eclipse, perpetuates his line in the male descent through his son Dick Andrews, a bay horse, sire of Tramp, also a bay, sire of Lottery, a bay horse, sire of Sheet Anchor, sire of Wetherbit, a bay horse, sire of Beadsman, Derby winner of 1858. Beadsman was sire of Blue Gown, Derby winner of 1868, who died at sea on his way to the United States in 1880, and Pero Gomez, St. Leger winner and second for Derby of 1869.

THE GODOLPHIN LINE.

The so-called Godolphin-Arabian, a brown horse whose history is a myth and breeding unknown, but whose qualities are none the less remarkable, was the second of the three prime founders. The descent of this horse in the male line is through Cade, a bay horse, by Godolphin, out of Roxanna, by the Bald Galloway; Matchem, a bay horse by Cade from a Partner mare; Conductor, a bay horse by Matchem from a Snap mare; Snap, by Snip, by Flying Childers; Trumpator, by Conductor, was from a mare of a variety of strains. From Trumpator descended Paynator and Sorcerer, a black horse, sire of Soothsayer, a chestnut horse (St. Leger 1811). Tiresias, a brown horse by Soothsayer, won the Derby of 1819, and Smolensko (Derby 1813) was sire of Gulnare (Oaks 1827) and Jerry, a black horse (St. Leger 1824). Jerry was sire of Tomboy (sire of Nutwith, St. Leger 1843) and Jericho; Nutwith was the sire of Knight of Kars. Comus, a chestnut horse by Sorcerer, begot Reveller, a bay horse (St. Leger 1819), and Humphrey Clinker, a bay horse, sire of Rockingham (St. Leger 1833), and Melbourne, the great sire of winners. Melbourne was sire of Sir Tatton Sykes (St. Leger 1846); his dam Cymbria was an Oaks winner. Rockingham was sire of the dam of the great Sir Archy, the founder, in a great degree, of the American race horse. Melbourne was also sire of West Australian, sire of

Australian, the great Kentucky sire of Woodburn farm until his death. West Australian won the triple event of Derby, St. Leger and Guineas in 1853, the first time it was ever accomplished. Marchioness, by Melbourne, won the Oaks of 1855 and Blink Bonny, by Melbourne, Derby and Oaks of 1857. West Australian's dam was by Touchstone, and was full sister to Cotherstone (Derby 1843).

THE BYERLY-TURK LINE.

The Herod line, from the Byerly-Turk, the third of the great primary trio, descended through Jigg, by Byerly-Turk; Tartar, by Jigg; and King Herod (or Herod), by Tartar. Herod's dam was by Flying Childers. His line is further perpetuated by his sons Woodpecker, a chestnut horse, and Highflyer. The Woodpecker line is famed for its great speed, and the Highflyer line for its great staying quality. Buzzard, by Woodpecker, produced from one mare three celebrated horses, namely, Castrel, Selim and Rubens. Castrel begot Pantaloon and he begot Ghuzner, an Oaks winner, Satinet, a St. Leger and Ascot winner, Libel, Sleight-of-Hand and Windhound, sire of Thormanby. Sultan, son of Selim, brother to Castrel, another and important branch of the Woodpecker line, was sire of Glencoe, whose dam was Trampoline, by Tramp, out of Web by Waxey. Glencoe, a chestnut horse, was sire of the famous brood-mare Pocahontas, dam of the great modern English sire Stockwell. Glencoe was also sire of a great number of mares in America whose success on the turf and in the stud is unparalleled. Rubens, the third of the trio of own brothers by Buzzard, is more distinguished for his daughters. Highflyer, by Herod, was a bay. His sons Noble, Sir Peter and Sky Scraper were Derby winners and his daughter Violante was an Oaks winner, and he had three St. Leger winners. Sir Peter begot Gladiator who begot Walton, sire of the dam of the French horse Gladiateur, which was the first foreign-bred horse to win the English Derby. Gladiator was sire of Queen Mary, the famous brood-mare, dam of Blink Bonny, Bonnie Scotland (sire of Luke Blackburn and Bramble, the Tennessee cracks, and a host of other good ones), and also of Balrownie. Blink Bonny won the Derby and Oaks of 1857 and was the dam of Blair Athol, a Derby winner and great sire of winners. The dam of Caller-On, a Derby winner, was also by Gladiator.

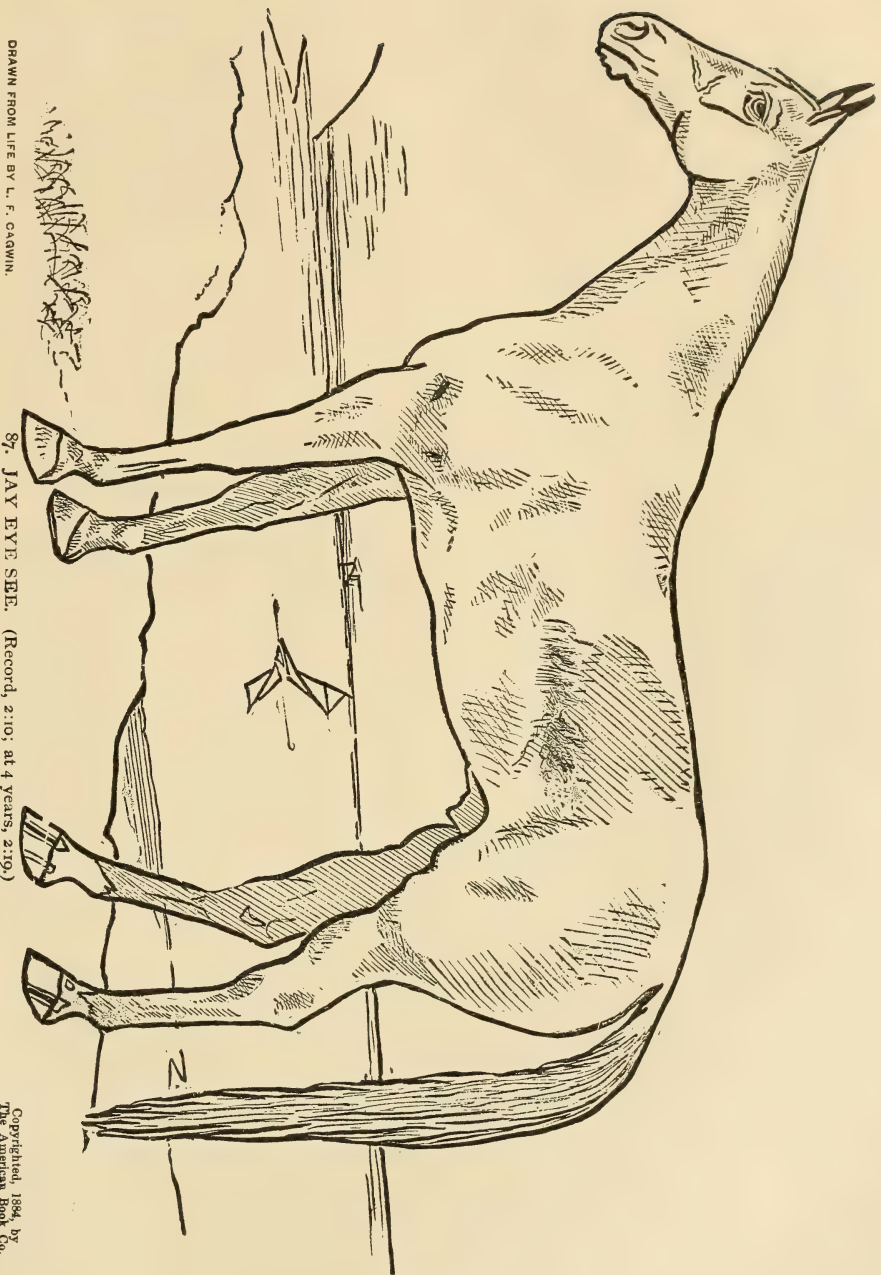
The foregoing will enable the reader to trace the breeding of most of our best strains, determining their line of descent and learning to which of the great channels they properly belong. As the most prominent only have been chosen to perpetuate the qualities of the race horse, the others are rejected and become obsolete, so that it will be found comparatively easy to trace most racehorses and sires to some of the collateral branches.

THE AMERICAN RACE HORSE.

The English thoroughbred began to be imported into America from the first. Direct descendants of the leading primary strains were imported into the United States, but our blood is based principally upon that of imported Diomed and his descendants, collaterally replenished by the blood of succeeding importations. Diomed, by Florizel, son of Herod (founder of his line), was the first winner of the English Derby and the father of American race horses. He was a chestnut without white, except a small touch on one heel, fifteen and three-fourths hands high, rather dished face, straight hocks and springy pasterns; he was started in England fourteen times and won eight, and won the Derby in 1780. He won £8,268 in all and was good at all distances. In England he produced many great race horses, including Young Giantess, and was imported into Virginia in 1798 in his twenty-second year, where he was more popular than any other horse had been until Sir Archy eclipsed him. Of his get, Sir Archy, Ball's Florizel and Duroc (sire of American Eclipse) were the greatest. He died in 1808. The current of succession was mostly through Sir Archy, although Duroc got American Eclipse, whose blood in a pedigree is by some considered the touchstone of success.

Sir Archy by Diomed, foaled in 1805, stood highest of all horses bred in this country, and yielded his owner \$70,000. His dam Castaniri was by Rockingham. Sir Archy was a rich bay, right hind pastern white, sixteen hands high, with deep oblique shoulders, full girth and short back. He produced winners from mares with all sorts of pedigrees, and some from mares with no pedigree at all. He was succeeded by his son Timoleon, whose dam was by Saltram (imported), son of Eclipse, out of Virago, by Snap, by Flying Childers. Timoleon was foaled in 1813. He started fifteen times, won nine, lost two, walked over four, and was a great horse in his day. His highest achievement was in producing the great race horse Boston, who in turn was the sire of the still greater Lexington, without a peer as a native sire. Boston was a chestnut, with a stripe and white hind legs, and familiarly known as "Old White Nose." He had a plain head, with dish-face, short neck, inclined shoulder-blades, a prodigious chest, great length, immensely powerful loins, hocks and thighs, short limbs, straight but very springy pasterns, and altogether great substance, almost coarse with his prominent ragged hips, rather flat ribs, but well-ribbed loins. He died in 1849 in his seventeenth year. His dam was by Ball's Florizel.

Lexington, by Boston, inherited his greatness in the male line, although the granddam of Iroquois is by Boston, thus skipping over the Lexington



DRAWN FROM LIFE BY L. F. GAGWIN.

87. JAY EYE SEE. (Record, 2:10; at 4 years, 2:19.)
313

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cross. As a producer of race horses Lexington stands at the head of American sires. His daughters are now proving themselves as good in the stud as his sons were on the turf. None of his sons inherit his prepotency to as marked a degree, although some of them are quite reputable as sires. It was through imported Glencoe mares that Lexington met with most success. Imported Leamington succeeded Lexington in popularity, and through his sons has become so generally the leading strain in the popular estimation in this country that every considerable breeding establishment of race horses has a stallion of the strain, or is seeking for one. Bonnie Scotland was very popular latterly, and is the foundation of General Harding's choicest breeding. The present blood of America is constantly being freshened by English importations which for some physiological reason harmonize with our strains to a degree that makes the crosses better than either branch; so it seems at least by the way our horses have succeeded in England.

THE HEAVY DRAUGHT HORSE.

In speculating on the origin of the heavy breeds of horses it will be remembered that we proposed to discuss the physiological causes of the variations of breeds by the union of two such opposite elements as the oriental horse and primitive horse of Europe.

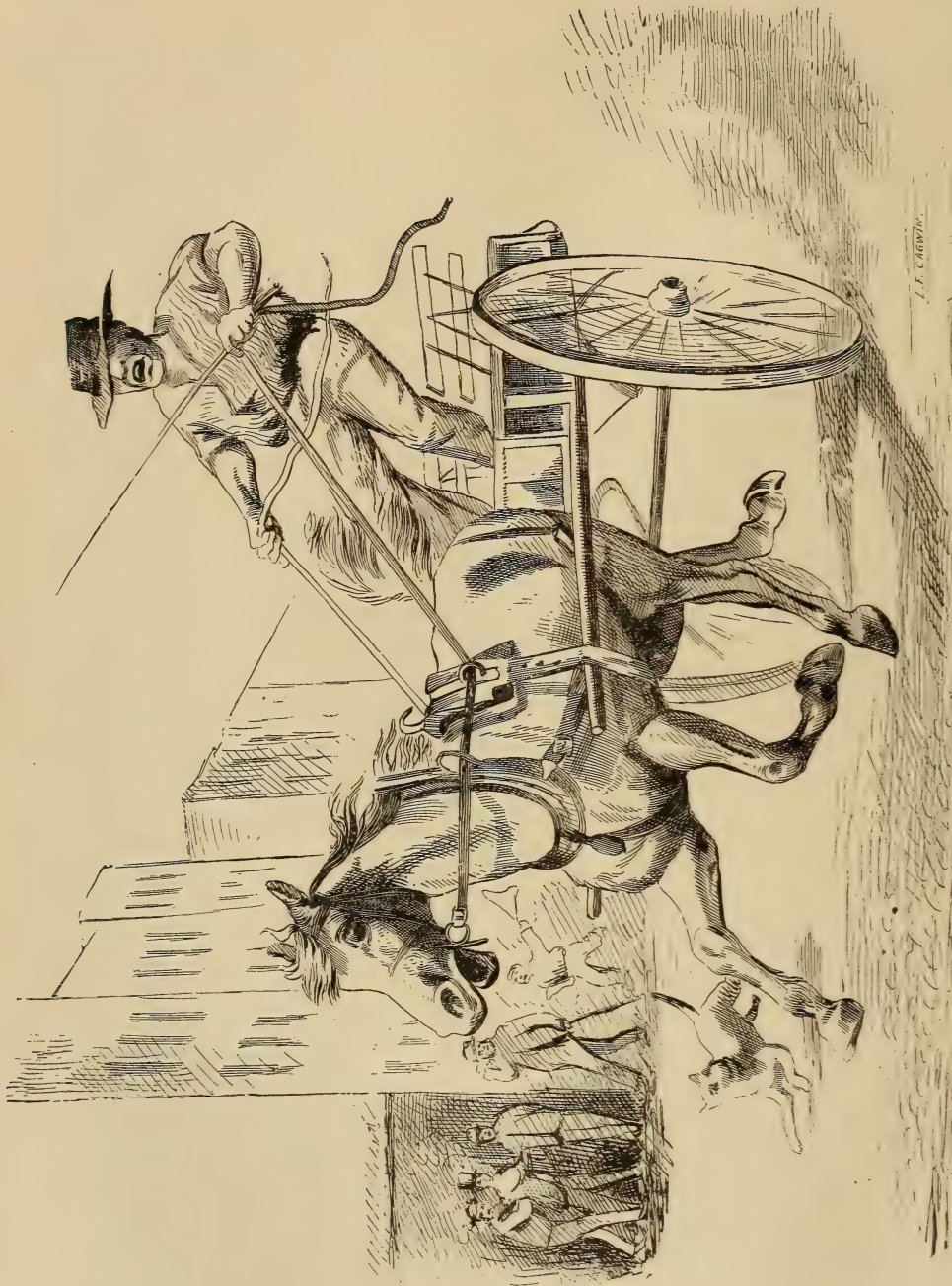
According to the theory that like begets like or the likeness of some ancestor, which is the fundamental law of breeding or heredity, it will be understood that a slight or marked reversion to some ancestor more or less remote, from physical causes which it is impossible to determine, will make the produce of these opposite elements, even from the same sire and dam, so widely different that one of the offspring may take the character wholly of one of the parents, or intensify some quality of an ancestor, or perhaps partake of the characteristics of both parents. In fact, the variation may be unlimited. If a breed is to be established, something more definite than this is required, and we must select an animal that not only has the physical traits which we wish to perpetuate but which also has the additional power of reproducing himself. That individual instances of this kind have existed and do exist admits of no successful dispute. To secure perpetuation, animals must be sought for mating which will cross kindly with them, so that their character will assimilate without altering those characteristics, except perhaps when it is desired to correct some defect. By this process a satisfactory result will in time be secured, and such animals will with reasonable certainty produce their like. Hence, in taking the cases of two animals, the one carefully bred, and the other equal as to other particulars but not so well bred, a wide difference will be seen in their offspring. One will re-

produce itself and the other will very likely beget something as different as one could well imagine.

Now the Arab horse has a comparatively short thigh-bone, with a long hip; the European horse has a long thigh and a short hip; the cannons of the Arab are long, while those of the European are short—and a like difference is seen in other parts of the skeleton. By breeding a stocky native stallion to a fine Arab mare one might get almost anything. The produce may take on the long bones of both parents, or the spongy tissue of the one and the length and looseness of the other. The extreme vital and nervous temperaments may be neutralized in the offspring and the bilious and lymphatic temperament predominate, the produce then becoming coarse, and gross, and thereby characterized by a tendency to excessive growth.

This is one of the physiological influences mentioned as productive of variations. We may be pardoned for believing, sincerely enough to advance the conviction, that such was the foundation of the heavy horses now found all over Europe and the United States, which were first known in Flanders, and are still called by the general term "Dutch horses." By taking such individual horses as were of more than normal size and breeding them by judicious crosses with a view to preserving those specimens which are most capable of reproducing those qualities of size and power, we now have a variety of horses which is quite common. They were first extensively known in Flanders, were introduced into England in the time of William the Conqueror, and all the famous British breeds are by some attributed to those importations. The breeds now known to be thus descended are designated as Suffolk Punch, a sorrel breed, Lincolnshire Blacks, Cleveland Bays, English Cart-horses and the Clydesdales of Scotland, but all are of the same stock as the Norman of France, the Belgian and Hanoverian breeds, and also the Danish draught horse from which the Conestoga horse of the United States is sprung. These horses have been imported into America so largely of late that their form and character have become generally known. Bulk of bone and hair are cultivated, as well as breadth and compactness of frame. The largest specimens weigh over a ton.

The famous Norman draught horse of France and the heavy breeds of the Netherlands are from the same Flemish stock. These monstrous horses have been imported into the United States so largely of late years that their characteristics are familiar to nearly every one. The most popular importations are the Normans, Clydes, English draught and Cleveland Bays. The Normans tend to gray in color and some of the darkest grays are very beautiful. The predominance of their iron-gray color is a strong point with the Normans. The Clydes are usually bay, sometimes marked with white legs and faces. Their bulk of bone is immense, and they are distinguished for the



J. F. CROWE

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88. THE ORIGINAL TROTTER.

shaggy appearance of their legs, the fringe of long hair beginning just under the hocks and knees and reaching to the ground, all round the hoof in some specimens. The heavy draught horses of England are very bulky, but the Clevelands are more rangy and stylish. All the large breeds have heavy and wavy manes and tails, thick neck, large head and great round feet.

THE AMERICAN TROTTING HORSE.

American progressiveness, the wonder and admiration of the Old World, is manifested in many ways, not the least important of which is the rise and development of the trotting horse. Trotting began in a humble way, and yet one of utility. The ponies of the bakers or butchers were hitched to their carts and urged by honest endeavor to reach their patrons in advance of similar outfits of equally enterprising rival shopmen.

Professor Brewer, of Yale College, has brought to light the fact that a horse called Yankey trotted a mile in 2:59, believed to have never before been excelled in this country, that time having been made in June, 1806, an account of the same appearing in the New York *Spectator*. This was the dawn of trotting for a time-record. Professor Brewer also shows why trotting became popular as a sport. He says: "Under the hostile laws against *races* other means were taken to gratify the instinctive pleasure of seeing horses get over the ground swiftly. A *race*, as then understood, was a contest between two or more horses, to see which could run the fastest, as it still is in most countries. Men did not dream of a race being run by *one* of anything. Moreover, in those times *horse-racing* meant *horses running*; so when horse-racing was a crime, punishable by fine and imprisonment, the good law-abiding citizen who owned a good trotter, and who instinctively yearned for the pleasure of seeing a spirited horse in action, would not run him, nor race him; he merely trained him and had occasional trials of speed in which he could hold his watch and see how long it took his horse to trot a given distance, and the *timing* of trots became common long before the system of records was established."

It was not until the year 1843 that the present standard of speed, 2:30, was beaten, when Lady Suffolk trotted in 2:28. This mare afterward trotted under saddle in 2:26½ and was hailed the queen of the trotting turf. Before this time long distance was more the test, the heats being two, three and four miles, the culmination being reached with the great performance of Dutchman, ridden by Hiram Woodruff, three miles against time in 7:32½, and this was not beaten until Huntress, by Volunteer, did it in harness in 1872 in the remarkable time of 7:21½. Dutchman and Lady Suffolk had many contests, but Dutchman was too much for the Lady

at these long distances. After she trotted her fast mile, mile heats came into vogue, generally best three in five. Lady Suffolk was a gray, by Engineer 2d, he by Engineer, by Messenger.

A greater star soon appeared in Flora Temple when she trotted at Kalamazoo, in 1859, against Princess and Honest Anse, making 2:19¾, the first to trot a mile better than 2:20. She there appeared in her exhibition exercise with her driver, James D. McMann. Thousands of people were on the track, and when the business-like little creature, with her great eyes sparkling in anticipation, made her appearance, submissively followed by the celebrated Ethan Allen, great was the demonstration of delight, and when the accommodating McMann consented to "give her a brush or two," loud and continued applause arose, at which Flora wheeled short around, tossed her head, kicked up her heels, and before McMann could gather the lines, dashed off at full speed, and soon reappeared with her fine electric stroke, her head eagerly extended, and her long mane flying in tangled confusion about her neck. Old Ethan was given a few spurts, and the beauty of his action could be seen, but he did not attempt to rival the flights of the little bay mare. Flora Temple became celebrated by her biography, charmingly written by Mr. George Wilkes, in his *Wilkes' Spirit of the Times*, which first made its appearance at about this time. She was perpetuated in art, and the fine picture of her by Maurer, published by Currier & Ives, of New York, is considered, by horsemen at least, as a prime work of art. As we remember Flora, she was a bay about fourteen and a quarter hands high, with black points, roan on the off side, a blotch of white near the crupper, and a fashionably docked tail. She had a pacing conformation, stout legs and feet, a fine head and neck, and high withers; but her chief characteristics were her very large, full, hazel eyes, and her decidedly business-like expression and action.

Flora Temple's harness-record remained the best until August 14, 1867, when Dexter at Buffalo trotted in 2:17¼, having previously trotted under saddle in 2:18½. Dexter is a brown gelding, fifteen and a quarter hands high, with four white legs and white face, by Rysdyk's Hambletonian, out of Clara by American Star, she out of the McKinstry mare, the dam of Shark, a fast trotter by Hambletonian. The Star blood was most apparent in Dexter, for, although very blood-like, he has a pacing-pony mould, lower at the croup than at the withers, fine shoulders, deep chest, strong loins but light waist, round, drooping quarters of great volume and compactness, back slightly roached, and strong legs. He trots with unsurpassed resolution and energy. Forward he makes some apparent waste of effort, but the way he gathers his hind legs, without that extreme tension seen in what is called big-gaited horses, gives an idea of nervous locomotion that



89. HAMBLETONIAN (Rysdyk's).

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is superb. The writer first saw him to wagon. He rises forward and his manner of moving gives the appearance of uprightness like a man walking. He was led from his stable onto the course by two attendants, whom he fairly dragged along with his quick walk, such was his nervous ambition. He was a hard puller and bore heavily on the check. He also had that side-to-side motion forward so noticeable in the Star blood. He never had the chance to show his best on the turf, for Mr. Robert Bonner purchased him (for \$35,000), and it is well known that he never trots his horses for money. We believe, however, that he trotted in 2:14 under saddle for Mr. Bonner. His most formidable competitors were Lady Thorn, George Wilkes, and Ethan Allen and running mate, these latter defeating him by making a record of 2:15.

Lady Thorn was a large bay, sixteen and a fourth hands high, by Mambrino Chief, out of a mare by Gano, son of American Eclipse; back of that, pacing and thoroughbred. A first impression of Lady Thorn was that of a blood-like animal of great length and angularity. With propelling powers of the grandest character, she looked as though she could "step over a house." Like Dexter, she was high-strung, but not so sensitive; she had a nervous habit of digging the air with a fore foot while in the stable; her length of limb was very great, but she had a low, easy stroke, settling close to the earth, trotting with great resolution. A smaller horse would look large alongside. She could do the home-stretch with an effect truly marvelous. Although her record is but 2:18 $\frac{1}{4}$, she is said to have trotted in 2:10 in a trial. She was cut short in her career by a deplorable accident while being shipped from Rochester to Buffalo where she was to trot against Dexter's time. She fell from the platform while entering the car, and permanently injured her hip—and Lady Thorn's day was over. Although this great mare had the refined quality of a thoroughbred, she was somewhat unsightly. The right eye was gone, and this made her push her nose far out, and to one side, while one of her ears was pointed forward and the other backward. Beside this, she had a sinking of the neck forward of the withers. She was more beautiful to go than to look at, although at any time she was an impressive mare.

George Wilkes, a brown horse, one hind pastern white, fifteen hands high, by Hambletonian, was the fastest stallion of his day, and considering his ability for speed of the fastest quality, and capability of producing speed in his descendants, he ranks as the best son of Hambletonian. Many marvelous stories are related of the wonderful flights of speed to which this horse attained. When the writer saw him trot it was with Lady Thorn, American Girl, George Palmer and Lucy. In that race Wilkes would

reach the three-quarter pole far in advance of the others, Lady Thorn being last. Thence home his speed would wane distressingly, but he would rally to a good position at the outcome, still in marked contrast to the terrific home-rush of Lady Thorn, the winner. He was not so in the early part of his career, it is said. His remarkable action has often been alluded to. While he trotted low and easy forward, he seemed to drag his hind legs, without drawing them under as in the case of his half-brother Dexter. He carried rather a low head. He was high at the croup and preserved somewhat the Hambletonian model, as distinguished from the pacing angularity. The grand trotter Wilson (2:16) bids fair to make one of the first of the age. He is the best of the get of George Wilkes.

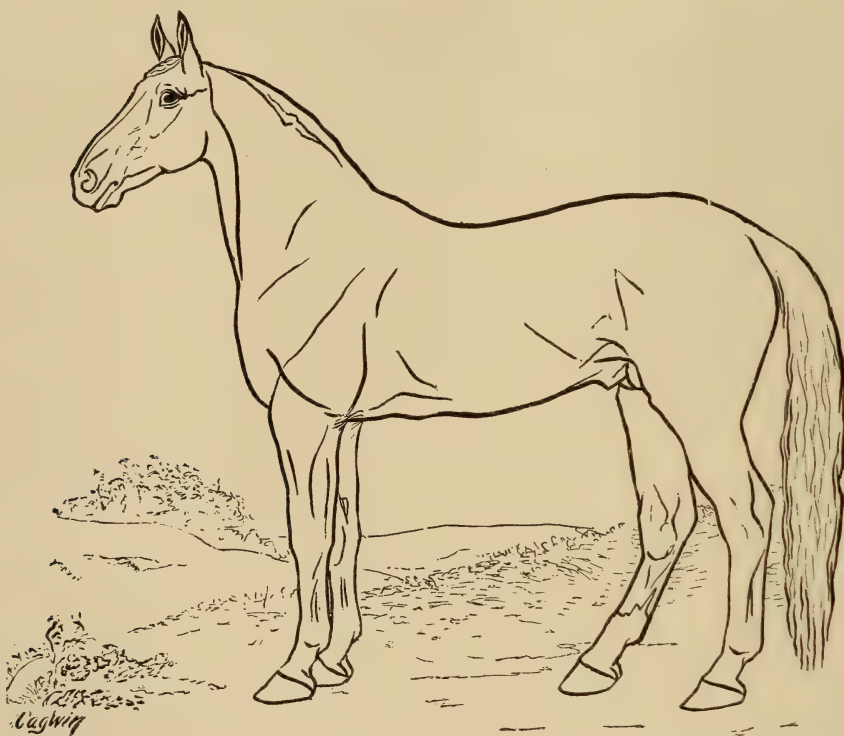
George Wilkes' record, 2:22, has been surpassed by only one entire son of Hambletonian, Jay Gould, whose dam was by American Star, and he need be mentioned only as having the purest and best balanced of trotting strokes, the poetry of motion.

Dexter's 2:17 $\frac{1}{4}$ remained the fastest record until 1871, when Goldsmith Maid lowered it one-fourth of a second at Milwaukee in a race with Lucy. She steadily decreased this until she trotted a heat in 2:14, which she was unable to excel. She was a bay, fifteen and a fourth hands high, of a wiry build and blood-like appearance, and wide, rakish hips that show the pacing incline. She had a slinging, loose way of moving, and when she became the nonpareil, she would intersperse her trotting with a few judicious breaks so cleverly taught as to almost escape detection. For severe service on the turf she has never been approached. She trotted one hundred and twenty-one races and won \$364,200. Prominent among her competitors were Lucy, Lady Thorn, from whom she could not wrest a heat, American Girl, Smuggler, Gloster and Rarus. Lucy was a large bay mare by George M. Patchen, with a big lunging stride, fastest heat 2:18 $\frac{1}{4}$. Lady Thorn has been described heretofore. American Girl, a bay mare without white, sixteen hands high or nearly (by Amos' C. M. Clay, Jr.) was a large-boned, powerful animal that scored 2:16 $\frac{1}{2}$. Smuggler succeeded in getting one or two heats from the Maid, and scored 2:15 $\frac{1}{4}$, still the fastest stallion record. Smuggler is pacing-bred and a pacer himself naturally. His grand sire Cadmus was the sire of Pocahontas the pacer, 2:17 $\frac{1}{2}$ to wagon, the fastest on record. Gloster was a bay gelding, seventeen hands high, of the rarest promise, though it was cut short by death. Gloster was by Volunteer. He was a grand trotting horse, of fine texture, with the pacing hip, and legs of the finest character. While he was moving one could detect a slight nod. He jogged peculiarly slowly, but this need not have signified any lameness at all, as it is not uncommon among trotters.

Rarus succeeded in wresting her proud title from Goldsmith Maid, and

placed it to his own credit in 2:13 $\frac{1}{4}$. He was a rangy bay gelding, hind ankles white, a star and a snip, sixteen hands high, and a very fine, elastic mover, with his long neck well up, and a graceful precision of stroke rarely seen. He is the *beau ideal* of a gentleman's trotter. Robert Bonner has him now, so that his turf career was necessarily short.

Scarcely had Rarus disappeared from the public when St. Julien made a record of 2:12, which he afterward improved to 2:11 $\frac{1}{4}$. He is a



90. BASHAW (GREEN'S).

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bay gelding, white hind ankles and a small star, about fifteen and three-fourths hands high, of a rakish pattern and a pair of inclined, branching hips and angular leverage, unmistakably pacing-like, but never known to strike a pace. Although distinguished for intelligence, his head, according to the popular notion, does not suggest such intelligence, it being large and marked by a receding skull and Roman nose. In movement he is so powerful and easy as to give the impression that some outside force is propelling

him, there being neither much knee-action nor width of propulsion behind. When entering the track, it is amusing to see him scan the grand stand, as if estimating the attendance. He is by Volunteer, dam by Harry Clay.

Unfortunately for St. Julien's prospects, he too soon had a stubborn and successful rival in the renowned Maud S, who now has the title of queen of the trotting turf. Yet she has it by a slender thread, for her kinsman, the black five-year-old Jay Eye See, is shadowing her so closely that her wonderful performance pales by comparison, noting the time at which she achieved it. Maud S, a chestnut, no white, fifteen and three-fourths hands high, is a light-boned, very muscular mare with fine limbs. Her action is rather high forward, owing to the use of toe-weights no doubt, and she has a peculiar gliding but far-reaching stroke, a folding and backward reach of the hind leg, together with a wide-open and lateral outreach that is peculiarly her own, with a spiralescent flexion and extension of the limbs. We learned from Mr. Bair, her driver, that she was not a natural trotter at first, nor yet was she a true pacer; she had a mixed gait which was overcome by the use of toe-weights. "She was high-strung," he said, "but susceptible to good treatment and willing to do right, but resented compulsory methods and severe treatment." She was by Harold, dam by Pilot, Jr., second dam thoroughbred—think she inclines to the Pilot-type.

Jay Eye See is a black gelding, hind ankles white, fifteen hands high, by Dictator, out of Midnight by Pilot, Jr., second dam Twilight, by Lexington. The breeding of Maud S and Jay Eye See, being so nearly identical, affords material for study; for, leaving out the Hambletonian influence which does not appear decided in either of them, Jay Eye See shows a Star energy that affixes him somewhat to that strain, with some of the Pilot characteristics; otherwise there are peculiarities in common between these great horses. The gelding is a more natural trotter than the mare, and this would seem to favor the Star blood, a most potent element in a trotting pedigree. His dam produced Noontide by Harold, a great mare, but not so great by nearly ten seconds as Jay Eye See; this again speaks for the Star cross. On complimenting Bither, his driver, for having made such a trotter, he disclaimed all credit for making him, and said: "He was a natural trotter from the start and made himself. All the credit due me is for not spoiling him." He has not that fine spiral flexion and extension of the hind leg that Maud S has, and there is where perhaps she would prove the superior if she were not handicapped with toe-weights. The Pilots, then, have the finest propelling action, and the Stars the clever faculty of getting the fore feet out of the way of the hind ones naturally, without mechanical aids, and the writer considers the propelling action of Maud S without a parallel among all known trotters.

ULTIMATE TROTTING SPEED.

To what rate of speed will the trotter finally attain? Many theories have been advanced upon this question. One mathematical professor has calculated from a law of progression that, taking the period from the time that the trotter became distinctly recognized to the present as the base, and the average reduction in speed from that time to the present as the ratio, the extreme limit will be about 1:31 to the mile. Absurd as this may seem, Mr. Wallace thinks that when horses are bred so that they become as natural at the trot as they now are at the run, so that they may be urged without fear of breaking, and not be hampered by the restraint of the bit or clogged with toe-weights, it may be possible for them to rival the runner in both speed and endurance. The *Spirit of the Times* says that, taking the extreme rate of speed for short distances as a base, with the natural improvements that time will bring to forward the continuance of that rate, considering also the fact that trotters and pacers have been known to go a quarter or even half a mile at a better rate than a mile in two minutes, a mile in two minutes or better will be made. The trotting horse Frank and his running mate J. O. Nay have a record that way of going of 2:08½. John Murphy, their driver, in order to satisfy himself as to the influence the runner actually had in assisting the trotter, harnessed him to a sulky, and with full trotting weights up drove him a mile as fast as he could run, and he could just make it 2:01½; the first quarter, 31¼ seconds; half, 1:01½; three-quarters, 1:31½. From this it would seem, the conditions being equal, that the trotter is now the equal of the thoroughbred runner, though it is claimed that a horse has run a mile to a sulky in 1:52, or thereabouts. Those who have seen the pacer Mattie Hunter get away from the score will agree that it would take a good runner to head her.

THE ORIGIN OF THE TROTTER.

What is the origin of the trotter, and how can he best be cultivated? Three distinct methods of producing the trotter are just now under discussion among the breeding public. The first is that of breeding a trotter with the trotting faculty to others with the same faculty, expecting that by this means a trotting breed of horses will in time become as standard as the breed of running horses is now. The second is by the introduction of thoroughbred blood into our present trotting strains, and thus giving them more refinement and speed, as these qualities are transcendent in the thoroughbred and Arab, care being necessary not to use so much as to destroy the trotting action or steadiness, qualities which the thorough-



91. PIERLESS (BY AMERICAN STAR).

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bred and Arab do not possess at the trot. The third theory is that all trotting is derived from modifying the pacing gait or faculty, shown by some examples only among horses.

The first theory is the one most desirable to arrive at, but in considering its probabilities we see that time will be required to form a breed of trotters by selection of the best examples possessing the qualities of speed, steadiness and game-endurance, as well as the power of reliably reproducing these characteristics in their progeny. The running horse shows but little improvement upon those examples which originated the breed, as Eclipse and Flying Childers. Except for the improvement of methods, it is doubtful whether out of the great numbers of race horses any could be found to have the natural qualities of speed and endurance much, if any, superior to those two horses. Running is a natural gait, and, so far as history shows, may always have existed as such. Is not it possible to make trotting just as natural a gait by carefully eliminating the running tendency? How long this may take, and whether the same object might not be accomplished differently, time will determine.

The second theory, the engrafting process by the union of examples already found to possess the trotting faculty with the more quickening impulse of the thoroughbred, is not reliable. Observation has led us to conclude that neither speed nor endurance of any kind is possible without the aid of Arab blood or its equivalent. The difficulty with this method is its uncertainty and consequent want of value to the average breeder, although individual examples of the highest class may now and then crop out.

In drawing special attention to the third theory of producing the trotting quality, the writer will try to first show how the pacers originated, according to his idea. That they are a distinct species is impossible, because they are fertile with other horses, and therefore belong to the same species. If they were a breed caused by circumstances, the outgrowth of a demand for that gait by some people in the remote past, and if those pacers now found reverted to some such ancestor, we should be able to trace them; but when we attempt to do so, we find that they trace back to two distinct breeds in every case where their breeding is known, and we are confronted on the one hand by the Arab horse, and on the other by the native European horse, neither of which furnishes as many pacing examples as when the two are combined. This brings us to the idea previously alluded to, namely, that all of our strains have arisen from the union of animals which present antagonistic characteristics, mental or physical, or both. Of such unions one result was the marked tendency to excessive growth, as found in the draught horse. By crossing two opposite temperaments both were neutralized and a third temperament was produced. The idea is now

advanced that the pacing gait and habit result from an intermixture of temperaments, not producing growth, as was the case with the draught horse, but the predominance of the physical structure of the one and the mental quality of the other, though by what physiological process or law this takes place is only guess-work.

To illustrate our meaning we will take as an example the stout and rugged northern horse, of which the French Canadian is a familiar example, disinclined to a gallop or any gait less leisurely than a walk, slow and difficult to arouse, activity at any gait an impossibility. On the other hand, we know that the Arab or thoroughbred has a nervous energy and a constant desire to go, but at a gallop; he can not restrain himself to trot, having no more trotting action than a cow, and he knows it and can never be taught to trot, but his swiftness at a gallop exceeds that of any other quadruped in existence. Now in the amalgamation of these extremes there may be produced, if not in the first cross, in some succeeding and more harmonizing remove, an animal that has the physical structure, angular frame and consequent angular action of his coarser ancestor, with the muscular refinement and nervous temperament of the finer one. He desires to go fast; running would for him require great waste of muscular energy and be an arduous task at which he would soon tire; he could not effect the graceful canter and gallop; he could adopt a compromise of a walk, a square trot and a run, and such as would be easiest for him would be likely to be the pace, especially in his first steps when a colt at his mother's side; and thus an original mental faculty would be developed.

Without such a faculty in some ancestor the writer believes it is not possible to teach a horse to trot fast, for while the ability to trot is possessed by most horses, fast trotting can only be derived from a modification of the pacing faculty, and this we believe to be the origin of the "trotting instinct," so called. This pacing habit once formed, like any other oddity, may be so fixed as to be perpetuated several generations without the necessity of doubling its strength, and even with doubling and redoubling may be difficult to preserve.

A careful observation of Goldsmith Maid led the writer to the firm conviction that trotters derived their form and gait from a source other than the thoroughbred. In studying her over he concluded then and there that she had a pacing form, and suddenly the thought struck him that the key to trotting was the pacing faculty modified, an impression of which he could never free himself. Under date March 10, 1874, the writer sent the following letter to Mr. J. H. Wallace, editor of the *Trotting Register*:

"I see in a late number of the '*Spirit*' that you qualify your Messenger theory of trotting instinct by admitting pacers as next to Messenger stock for imparting that in-

stinct. Now, a year ago last September I wrote you a letter inquiring about Jim Irving and your views about his thoroughbred pedigree, and you wrote me that his sire was a pacer and not a thoroughbred, which you have since proved to your satisfaction. Shortly afterward I was in Chicago, looking at Goldsmith Maid with a view of trying to make out her likeness to a thoroughbred, as others had, having in my mind at the time that breeding gave a trotter his speed; but I failed. I could see no particular resemblance, but those hips, thighs and stifles set my mind inquiring what particular breed they belonged to, for they looked decidedly familiar. At last I was persuaded and exclaimed that Goldsmith Maid was a pacer in form, consequently in breeding, although I was aware that there was no known pacing blood in her. So firmly was I convinced that pacing blood gave the trotter his speed that I then referred to all the known instances from Highland Maid down to the pacing sires and trotters of the present day. I wrote you a long letter, but destroyed it, not willing to trouble you before I had investigated further, and not wishing to disturb the Messenger theory on which you had already written one book and were compiling another. I did investigate and found every circumstance strengthened the proposition that the pacing element in a trotter gives him speed.

* * * The question whether the world will be benefited by a knowledge of the fact that our grand trotters, our beautiful fast flyers, are after all descended from an insignificant scrubby pony, or worse, the long-despised pacer, will be answered by asking whether the world will be set right, or go on blindly breeding to horses and from mares that have no more trot than a Newfoundland dog, simply because they are Hambletonians, Mambrinos, or thoroughbreds."

In reply, Mr. Wallace wrote as follows, from Allegheny, Penn., under date March 16, 1874:

"Your very interesting letter is before me, and it is a real sorrow that I have not time to consider it in detail. * * * It is a truth as firm as the everlasting hills that English Mambrino and his son Messenger did found a race of trotters, without any *known* assistance. It is a truth also, just as well established, that fast trotters have come from pacing ancestors. All the trotting speed of this country comes from one or the other of these sources, except possibly from the dam of Vermont Black Hawk. Whatever speed the Morgan possesses and imparts comes from the Canadian. I propose to make the Canadian a subject of careful investigation the very first leisure and opportunity that I have. He is worthy of great consideration in the problem, but he cannot displace Messenger as a fountain of trotting blood. Why not give your ideas to the public through the *Spirit*? I assure you they are valuable."

Since that time Mr. Wallace endeavors to show that his ideal trotting founder, Messenger, derived his faculty from the old English pacing breed.

TROTTING BREEDS, ETC.

The foundation is already laid for a breed of trotters; the Hambletonians being noted for general make-up, for substance and quality, as well as for positive trotting capacity; the Mambrinos for size and lasting endurance; the Clays for tenacity of trotting action; the Black Hawk and other Morgans for their general utility; and other strains for remote crosses. Other



92. HINDA ROSE (Yearling Record 2:36½; 3-Year-Old 2:19½).

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families will no doubt come forward with much more prominence for the furtherance of the trotting habit and the establishing of a breed of trotters. Therefore it must be plain that, according to the law that like begets like, if these examples thus show the tendency to either trot or pace, in time a breed of trotters must result, if such animals with this tendency are selected for breeding purposes as have the further capacity to reproduce numbers as well as individual examples. This brings us to the question, What has been done toward establishing a breed of trotters?

In the early history of trotting in this country it was found that the blood of imported Messenger was frequently met with in the horses, so that it became very popular, and its best use has culminated in the descendants of his son Mambrino through two channels, the main one of which was through his son Abdallah, and through Abdallah's son Rysdyk's Hambletonian. The other Mambrino branch came down through his grandson Mambrino Chief.

The horse Hambletonian became popular in the stud because of the Messenger blood he inherited, and because he was a son of Abdallah, the popular trotting sire of his day. Then his son George Wilkes, by virtue of his performances, gave him great notoriety, quickly followed by Dexter and others, until now he has thirty-six representatives in the 2:30 list. Hambletonian heads the list as the foremost prepotent element in the formation of a breed. A great deal of writing and tabulation of statistics has been advanced to show his excellences, but that the arguments may not be one-sided, the following comparison is presented: The stud-books of Hambletonian show that he begot over thirteen hundred foals, thirty-six of which trotted in 2:30. Woodford Mambrino begot eighty-nine foals, ten of which have trotted in 2:30. This shows about three per cent. for Hambletonian and ten per cent. for Woodford Mambrino. This fact is attracting attention, and the stud-books of other horses are to be investigated.

To what extent a sire will attain to the perpetuating capacity is a question which deserves as much consideration as the rate of speed. That Hambletonian's record will be far surpassed there can be no reasonable doubt. Other horses with like chances might perhaps have done as well or better, but this strain has in some way been forwarded, and has evinced a harmonizing and neutrally composing element which will be advantageous in a lasting degree. Next to George Wilkes, Volunteer is the most prepotent of Hambletonian's sons, with twenty-three 2:30 performers, five of which have marked below 2:20, and one 2:11 $\frac{1}{4}$. Dictator, brother to Dexter, has three trotters in 2:17 or better, and one in 2:10 $\frac{3}{4}$.

Harold has the fastest trotter of all the sons of Hambletonian, or any other horse, in the performance of Maud S in 2:10 $\frac{1}{4}$, though a great

many other sons have produced numbers of 2:30 horses. Beside this speed-production, Hambletonian has begotten horses with his capacity of reproducing producers, the most prominent of which is Alexander's Abdallah, who produced the trotter Goldsmith Maid (2:14), and the great producing stallion Almont, who has produced twenty-three trotters and one pacer with 2:30 records or better, three of which have beaten 2:20, beside several stallions that have produced 2:30 performers. Among the other sons of Alexander's Abdallah that have produced 2:30 trotters are Jim Monroe, Belmont, Major Edsal, Thornedale, Wood's Hambletonian, and Abdallah Pilot. Many grandsons of Alexander's Abdallah have also produced well.

The other Messenger branch, through Mambrino Chief, is scarcely less important. While not giving us as many trotters or as great speed, for other purposes perhaps just as desirable, it has done much to preserve the trotting form. Its representatives incline to size and style, as well as to constitutional vigor, vitality and lasting power. Their founder was a large, coarse, heavy-headed, but strong and resolute horse, with a very powerful, sweeping gait. He has six 2:30 performers to his credit. His son Mambrino Patchen, brother to Lady Thorn, has thirteen; Woodford Mambrino, another son, has ten; of his other sons, Clark Chief has eight, Mambrino Pilot six (one in 2:17 $\frac{3}{4}$), Ericsson five, Manbrunello two, Fisk's Mambrino Chief four, Idol three, Ashland Chief two. His grandsons bid fair to produce equally well. This in the main brings down Messenger.

If we classify pacers under the head of distinct individual founders, one pacing stallion would still take rank in direct prepotency, although his powers of perpetuation have gone no farther than the first generation to any extent. We refer to Blue Bull, and it is a question whether he does not take equal rank with Hambletonian in this respect, and some claim that he even surpasses the latter. He has thirty-four trotters to his credit in the 2:30 list (another being doubtful), and he has one pacer, so that in this matter he would equal Hambletonian's thirty-six, if the pacer and doubtful trotter are reckoned. Besides, it is very certain that he will surpass him in the future. If the present standard should be cut down to 2:25, each would have fourteen; if it were reduced to 2:20, Hambletonian would have two and Blue Bull one, both being then surpassed by a number of others. (Since the foregoing was written two other trotters of the 2:30 class have been added to Blue Bull's record).

The next greatest of the pacing families are the Pilots, the descendants of old Pacing Pilot, through his sons Pilot, Jr., Tom Crowder, and a few others of less note. Pilot, Jr. has seven or eight trotters in the 2:30

list; of his sons, Bayard has three, Tattler two, Roscoe one, Pilot Temple one, Pilot Duroc one. Yet it has been through the female lines that his blood has gained its greatest celebrity, one of his mares producing a 2:10 $\frac{1}{4}$ trotter and another a 2:10 $\frac{3}{4}$ performer. Many other daughters of Pilot, Jr. have produced wonderfully well, and no mares are more eagerly sought than his. The Crowder branch of the Pilot stock is most favorably known through Tom Wonder, sire of four 2:30 trotters, and there are many other scattering examples of the Pilots.

The Hiatogas were great speed-producers, both pacers and trotters. Scott's Hiatoga was the sire of six 2:30 pacers and five 2:30 trotters. The Cadmus family were descendants of Iron's Cadmus who was the sire of Pocahontas (pacer, 2:17 $\frac{1}{2}$ to wagon), and grand sire of Smuggler (2:15 $\frac{1}{4}$, the fastest trotting record by a stallion). Pocahontas was the dam of Tom Rolf, sire of Sleepy Tom (pacer, 2:12 $\frac{1}{2}$), Gem (pacer, 2:13 $\frac{3}{4}$), Lady Rolf (trotter, 2:22 $\frac{1}{4}$), Tom Hendricks (trotter, 2:25), and Young Rolf, a newcomer, is now also added to his 2:30 list. Tom Rolf was also the sire of Pocahontas Boy, sire of Buffalo Girl (pacer, 2:12 $\frac{1}{2}$), the fast pacer Gurgle, and about a half-dozen of 2:30 pacers and trotters. Bonner's Pocahontas (2:26 $\frac{3}{4}$) was a daughter of Old Pocahontas, and the fast young stallion Revenue, by Smuggler, is descended through his dam from old Pocahontas.

The Davy Crocketts have a large showing, though scattering, the best results being reached through Legal Tender, sire of Red Cloud (2:18), and several other 2:30 pacers and trotters. Then there are the Tom Hals, Redbucks, Corbeaus, with many others, and when the fact is appreciated that these horses were mostly kept in the back ground, with no opportunities and a nominal service fee, not held for the purpose of breeding trotters, and when we further consider their limited produce, we may reasonably suppose that, with such chances as are now afforded stallions, much greater celebrity might have been attained.

Looking at the unhampered results of the produce of pacing-bred mares, we see a legion of trotters that spring from this source which, when gathered together, are a convincing proof that the pacers are the Cinderellas of the trotting world, and their proud sisters, if their breeding were studied and the pages of their history were fully open, would after all be seen to be of the same plebeian origin.

Whence came the pacing tendency in the Hambletonians? has been asked. Whence, indeed? There are many gaps to fill in the Hambletonian pedigree. Perhaps it is in these. Look for it in the dam of Abdallah, or even in the dam of Hambletonian himself. You do not know that it is in them, nor do you know that it is not there, though you do know that, if they have it, they must have received it from *some* source.



93. WILD FLOWER. (Record 2:21 at 2 Years).

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In reviewing the claims of the pacer as a progenitor of trotters, we see that the fastest trotter in the world, Maud S ($2:10\frac{1}{4}$), is a converted pacer, for she paced and racked. The fastest trotting stallion, Smuggler ($2:15\frac{1}{4}$), was originally a pacer. The greatest progenitor of trotters (if we accord to Blue Bull this distinction) was a pacer and the most of his best trotters were converted pacers. The fastest trotter under saddle, Great Eastern, was once a pacer. Trinket ($2:14$) was converted to the trotting faith, though a very fast pacer, and a majority of the best trotters pace or amble more or less, which it is well known the best thoroughbreds never do. Moreover, nearly all of the best trotters have a pacing conformation.

The next family of trotters is that of the Bashaw blood, generally understood to have originated with imported Bashaw, an Arabian or Barb horse. It is sub-divided thus: (1) the Bashaw proper; (2) the Clay, through the descendants of Henry Clay, the son of Andrew Jackson, son of Young Bashaw, by imported Bashaw; (3) the Patchen, through the descendants of George M. Patchen, son of Cassius M. Clay, by Henry Clay. To the descendants of the Bashaw proper belong Long Island Black Hawk and his descendants, chiefly represented by his grandson Green's Bashaw, who has eleven $2:30$ performers to his credit. Long Island Black Hawk was by Andrew Jackson. The Clays are the descendants of Henry Clay, principally through his son Cassius M. Clay and his descendants (not including the son of the latter, George M. Patchen, and his descendants, which constitute the Patchen branch). Two of Cassius M. Clay's sons produced each four $2:30$ trotters, and another three; another produced American Girl ($2:16\frac{1}{2}$), the fastest representative of this branch. The Clay blood is further diffused through their sons and is considered very valuable in both the male and female lines, the dam of St. Julien, by Harry Clay, son of Neaves' Cassius M. Clay, Jr., being the choicest specimen in the female line. Other descendants have more or less distinguished themselves, as the dams of Hattie Woodard ($2:15\frac{1}{2}$), George Wilkes and others. Among the much-sought Clay mares those of Harry Clay have heretofore been the favorites. George M. Patchen, sire of Lucy ($2:18\frac{1}{4}$), is best represented in the male line by Godfrey's Patchen, sire of seven $2:30$ performers, one being Hopeful with $2:14\frac{3}{4}$ to his credit, with the best wagon time, $2:16$.

The next family to be noticed will be the Morgans with their innumerable branches, chiefly known through Vermont Black Hawk, and he mainly through two channels, Ethan Allen and General Knox, the first a son and the second a great-grandson. Ethan Allen produced seven $2:30$ trotters, his sons Daniel Lambert twenty-six, Woodard's Ethan Allen six, Bacon's Ethan Allen three, Honest Allen two. Many other sons have produced well, as

also the sons of Daniel Lambert. General Knox produced eleven and his son Gilbreth Knox three 2:30 performers, and others of his sons have produced well. Golddust, a Morgan, produced five 2:30 trotters.

The blood of American Star, now so fashionable, is to be met with almost wholly in the descendants of his daughters, about thirty of which have produced 2:30 trotters, many of them two each, and Clara, the dam of Dexter, produced three, being also the dam of Dictator, the premier sire. All of these were by Rysdyk's Hambletonian, and it was to Clara that the Hambletonian Star cross owed its first impetus. Widow Machree, a daughter of Star, and one or two others were the only trotters he can claim for the 2:30 list, but the Widow produced Aberdeen, who has more 2:30 performers to his credit than any other stallion of this cross—nine trotters and one pacer, the fastest of which is Hattie Woodward (2:15½). Beside these, the others of this cross who have produced well are Jay Gould, Enfield, Masterlode, Independent, Startle and Walkill Chief; and some of the sons of American Star are represented by one, two or three each. The breeding of American Star is not certainly known, but as he and his descendants possessed many physical characteristics in common with the Pilots and Blue Bulls, it is most probably the case that the pacing element was the dominant feature of his ancestry, well ground in with thoroughbred, especially if his daughter, the gray mare Peerless, owned by Robert Bonner, may be taken as a model.

There are many other valuable strains of trotting blood, mostly of Canadian origin, among which are the descendants of Champion, Royal George, Columbus, St. Lawrence, and many others that will no doubt in the future rank high. Some individual trotting sires have other merits as well as speed to recommend them to favor. Especially is this the case in regard to size, style and showy appearance. The most noted are Daniel Lambert, Mambrino King, Don Cossack, King Rene, and Almont Lightning.

COLT TROTTING.

The educating of the trotting horse in his infancy has attracted much attention of late years, and is very important to breeders, for it enables them to dispose of their stock much more quickly than if they were obliged to wait for the animal to mature. The first notable colt performance was that of Ethan Allen on May 10, 1853. He gained a record of 2:36 when four years old. Magna Charta, at four years, on October 14, 1859, scored 2:33½. Erricsson, in 1860, lowered the record to 2:30½; Bruno, in 1865, to 2:30; Galatea, in 1877, to 2:25½; Elaine, in 1878, to 2:24¼. Trinket was the first to get below 2:20, making 2:19¾. Jay Eye See lowered the same



9¢ JOHNSTON. (Pacing Record, 2:10.)

536

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three-fourths of a second, and Bonita now holds the scepter with 2:18¾.

As a three-year-old, Cora, in 1860, made 2:37¾; Blackwood, in 1869, 2:31; Lady Stout, in 1874, 2:29; Phil Thompson, in 1881, 2:21; and Hinda Rose, in 1883, obtained the fastest heat on record, 2:19½.

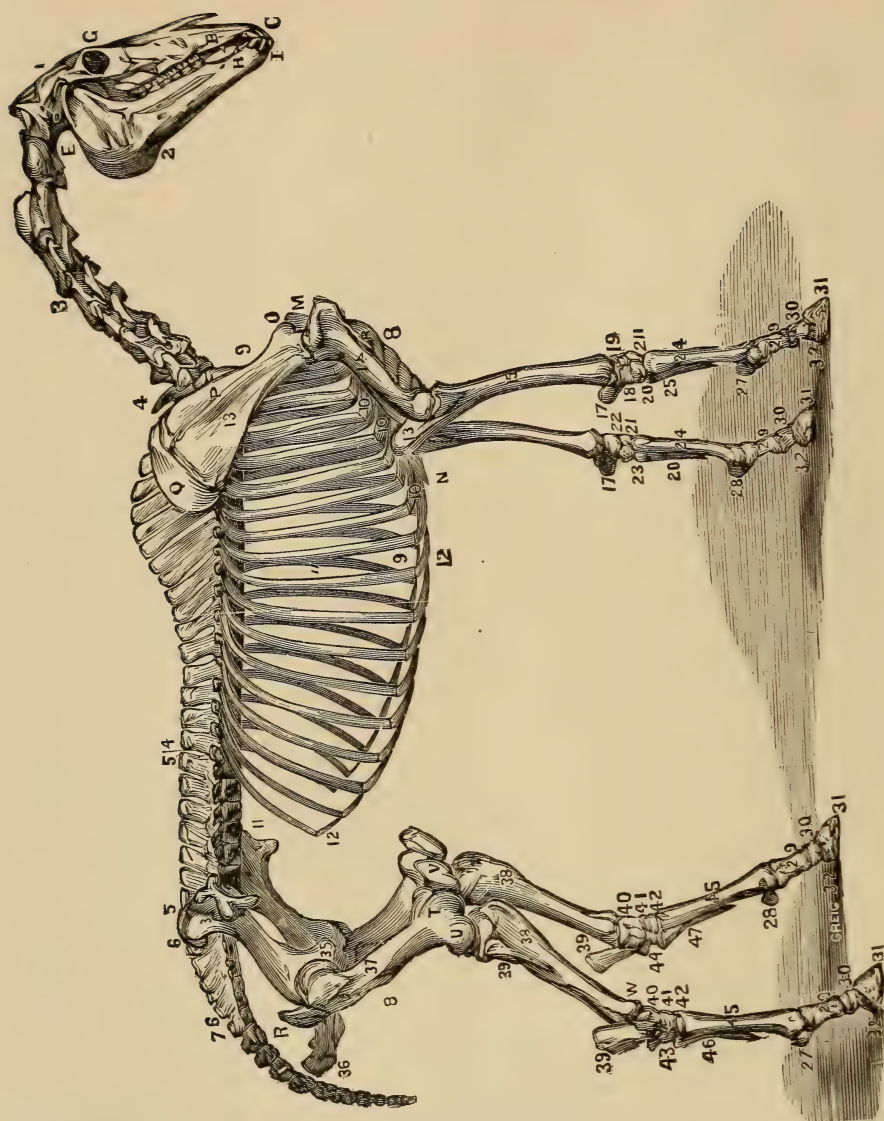
At two years, Julia Ann Johnson scored 2:45½ in 1871. The following year Doble lowered this record to 2:40¾; in 1877, So-So made 2:38½; in 1880, Fred Crocker made 2:25¼; in 1881, Wild Flower made the remarkable time of 2:21, and Sweetheart 2:23¼.

The great yearling performance of Hinda Rose, 2:36½, stands alone and unapproached, and is a remarkable record for that age.

PACING.

Nothing like the attention has been devoted to the pacer that the trotter has received, so that his history and performances are obscure. There have no doubt been many fast pacing records that are now lost through neglect. In old times such horses as Roanoke, Oneida Chief and Hero were accounted on a par with the trotters of the day; but when the wonderful mare Pocahontas distanced Hero in 2:17½, and drew a wagon, and that too with an overweight driver, with the greatest ease, it was found that the trotters of the day were not up to that record. Since then the record has been gradually lowered, till now 2:10 has been reached by the bay gelding Johnston, and this also eclipses the trotting record which for a time held the supremacy. It is the popular belief that the star of the pacer is in the ascendant, but it is very doubtful whether pacing can ever compare with trotting, especially when we can breed trotters from trotters with certainty, so that the trot will be as natural as the pace now is. Already we see so many examples of great performers bred directly from trotting stock that we may hope in the near future to rely on the actual establishment of a breed of trotting horses, and a pure-bred trotter will be much more desirable than an animal produced by the hap-hazard method of hybridizing from which most of our great trotters have sprung.

[At Chicago, on July 10, 1884, when the above was standing in type, the pacer Westmont, a chestnut gelding, by Almont, with his running mate Firebrand, a thoroughbred by Fireball, made the marvelous record of 2:01¾ on an exhibition turn—first quarter, 30¼ seconds; half, 1:00; three-quarters, 1:30. In spite of a break at the finish, he thus did the fastest mile ever made in harness, and handsomely led all former pacers and trotters. Frank and mate had astonished horsemen in the fall of 1883 by a score of 2:08½.—EDITOR.]



95. SKELETON OF THE HORSE.

- | | | |
|-----------------------------------|----------------------------------|----------------------------------|
| 1. Cranium. | 13. Scapula. | 29. Os suffraginis. |
| 2. Lower jaw. | 14. Humerus. | 30. Crown bone. |
| 3. Cervical vertebræ. | 15. Radius. | 31. Hoof. |
| 4. Dorsal vertebræ. | 16. Elbow. | 32. Wing of pedal bone. |
| 5. Lumbar vertebræ. | 17. Os pisiforme. | 33, 34, 35, 36. Os innominatum. |
| 6, 7. Sacrum. | 18, 19. } Carpal bones. | 37. Femur. |
| 8. Coccygeal vertebræ. | 20, 21. } | 38. Tibia. |
| 9. Sternum. | 22, 23. } | 39. Os calcis. |
| 9, 9. True ribs. | 24. Large metacarpal bone. | 40. Astragalus. |
| 10, 10. Cartilages of true ribs. | 25. Outer small metacarpal bone. | 41, 42, 43, 44. Tarsal bones. |
| 11, 11. False ribs. | 26. Inner small metacarpal bone. | 45. Large metatarsal bone. |
| 12, 12. Cartilages of false ribs. | 27, 28. Sesamoid bones. | 46. Outer small metatarsal bone. |
| | 47. Inner small metatarsal bone. | |

CHAPTER I.

SIGNS OF HEALTH AND DISEASE.

ANATOMY AND PHYSIOLOGY.

WHATEVER may be one's opinion upon the great question of evolution, even a little observation will demonstrate to every one that the Creator of the universe has maintained a marvelous *unity of design and organism* throughout the various orders of animal life. While man is "fearfully and wonderfully made," the same wonder is aroused when we see that the several animals, particularly of the higher kinds, have substantially the same physiological organs and functions. He who has made a study of the human body has the material facts about the horse, ox and other domestic animals. It would evidently involve tiresome and unnecessary repetitions to give the general anatomy and physiology of these animals after the treatise which we have set forth on those subjects as related to man. The reader will find about all the information on these topics that he will have occasion to apply in the domestic treatment of his animals if he will refer to the introductory pages of the appropriate chapters in Part I. To be sure, the functions vary not a little and a few differences in organism exist, but these will be mentioned in the course of the following pages as the treatment will most properly demand. It is obvious, too, that after the horse has been fully treated, very much will have been said that is applicable to other animals, the cow, sheep, hog and dog in particular. Hence, the part of this book which is devoted to the Horse will not only give all needful information upon the comparatively few disorders of the Ass and Mule, but will be frequently referred to in the parts devoted to other animals.

In giving the Signs of Health and Disease of the Horse, we ask the reader to understand that he has before him very much that applies to other animals, and can gain the required facts by substituting the name of the one which he is studying in the context.

SIGNS OF HEALTH.—The following are general signs of health: Smooth and bright coat, loose skin, medium warmth of all the parts, clear

and bright eyes, natural but not excessive appetite which is not affected by ordinary work, regular and easy passages from the bowels and bladder, regular respiration from eight to ten times a minute, uniform heart-beats about forty-five per minute and a medium load of fat. If any of these are materially disturbed some derangement exists, and more or less disease is present if such disturbance is more than fitful.

SIGNS OF DISEASE.—The family physician is helpless unless he knows the symptoms of his patient, but these he can learn with more ease by asking questions than one can determine the condition of a dumb animal. He who would treat the latter must wholly depend upon his observation. Indeed, the owner of such an animal can scarcely be deemed less than cruel if he is so careless as not to extend to it a reasonable attention to ascertain whether it is in health. Any one can be reasonably certain whether his domestic animals are sick or well if he but be observing.

Prominent signs of disorder are these: Failure to notice a sound or the approach of another animal or a person, heedless standing, hanging head, general dullness, with eyes and ears perfectly still or drooping. Such signs are to be seen whether the animal is tired, old, abused, sleepy or sick. If the skin is pimply, or cold and damp, or unusually hot, dry and harsh, or sticks closely to the flesh and bones; if the hair stands on end and is not bright and smooth; if the nose, ears and feet are unduly cold in moderate weather; if the animal paws his bedding, or shows an unusual disposition to lie down, or looks around at his sides, switches his tail in the absence of flies, or uneasily stands on different feet successively, then pain is most likely present, and certainly the animal is not well. A more detailed notice of some signs is now in order.

The Pulse.—The pulse is the stroke felt at a point where an artery comes near the surface. In man, it is more commonly sought out on the wrist; in the domestic animals it is more easily found at the edge of the jaw. Passing the finger from the angle of the jaw along the lower edge, we will notice a slight depression or notch, and by pressing the finger into this we feel the pulsations of the artery. Whereas in man in adult life the heart beats, or the pulse, will be from 65 to 72, and may be increased a half or even doubled by excitement, those of the horse are much less, ranging about as follows: At birth, 100 to 120; at two weeks of age, 80 to 96; three months, 68 to 76; six months, 64 to 72; one year, 48 to 56; two years, 40 to 48; four years, 38 to 48. The average after three years is about 45. These figures may be considered the standard of a healthy pulse, some allowance being made for variations of temperature.

In health the pulse is regular, full, round and distinct, and when increased by excitement it retains the same relative characteristics. It is

well to frequently examine the healthy pulse that the finger may become accustomed to it. In doing this we should note not only its rate, but the characteristics as well, with the conditions surrounding the animal, for the characteristics and rate materially depend upon these conditions. In disease there are many variations, and a few of the most common will be given.

When the pulse is quick and strong, from 60 to 120 beats per minute, and the artery feels full and not easily compressed, it is an indication of fever or some inflammatory disease.

When it is quick and small, the artery appearing not full, and the pulsations are feeble, it indicates a state of depression or debility, such as is found in low, exhausting diseases, as typhoid pneumonia in the latter stage.

When the circulation through the brain is obstructed, the pulse is full and strong but slow, sometimes the beats being one-third below the normal standard. When this condition exists and the pulse is feeble, it indicates apoplexy or other serious brain disturbances, as paralysis for example.

Sometimes the pulse is intermittent, losing a beat occasionally; it may be the result of some functional disorder of the heart, or permanent and point to some organic diseases of this organ.

The compressible pulse is full and plump, a very light pressure will detect the pulsation, and if the pressure increase the pulsation ceases; this indicates a weak circulation and is usually the result of congestion.

The Nervous System.—If any of the following symptoms are seen, affections of the nervous system are indicated, and such diseases should be studied under their special divisions:—Defective hearing or sight, or complete loss of the same, eyes changed in color, general stupidity, loss of use in some part of the body, tremors, twitching, convulsive motions, stiffness, marks of dizziness, perhaps with falls, repeated turnings around, frights without cause, enlarged or injured head. If these symptoms are noticed, further examination should be made to ascertain especially whether the pulse is right, as well as the temperature of the body and the breathing. Of course the tongue, mouth and urine should be examined.

The Digestive System.—Evidences of disorder in the digestive system are these:—The tongue and mouth may be dry, hot, furred or slimy, or of a bad odor, or may show eruptions or sores; the appetite may fail, or be unnatural, as shown by eating poor instead of good food, and licking iron, dirt or stones; the thirst may be unusually great; the belly swollen, giving a hollow sound when struck; the dung may be hard, dry, light or dark-colored, difficult or infrequent in passage, or too soft and thin, passing too frequently or involuntarily, or it may be discharged with apparent fear, may smell disagreeably, or be bloody; the teeth may be decayed or worn

short, and the animal, even when eating good food, may suddenly stop eating and soon commence (in such cases an examination should be made to ascertain if there are not sharp edges on the teeth to be filed down, or whether there is not a thorn or other foreign matter to be removed).

Breathing.—It being well known that any disorder in a horse's breathing depreciates his value very much, this subject should be well studied. Breathing consists of two parts—the taking in and the expelling of air, marked by the swelling and falling in of the flanks, which should be even and barely perceptible. Symptoms of disordered breathing are a cold nose (in ordinary circumstances) or nostrils unusually red, dry and hot, or giving out a discharge with or without bad odor; raw or ulcerated nostrils, the breathing though being perhaps interrupted by swelling, mucus, or warty growths in them; dry, short, or spasmodic coughs; sneezing; coughs, with phlegm-discharges, and short, obstructed, or painful breathing. Breathing is most rapid in young animals. It becomes more rapid by overloading the stomach and by other causes which impede the action of the lungs. Any excitement, as a fright or exercise, will have a like effect. By a test on one horse which normally breathed ten times to the minute, the number was nearly trebled after a walk of a few hundred yards; after a trot of five minutes, the respirations exceeded fifty, resuming their natural conditions after three minutes of rest; by a gallop of five minutes the number was extended to sixty-five for one minute.

A quick, short respiration denotes pain, most probably in the intestines, and a catching and interrupted respiration indicates pleurisy.

The respiration in which the heaving of the flanks is seen at a distance is a sign of inflammation either in or about the lungs.

The respiration in which the rising of the flanks is suddenly cut short, and the expulsion of the air performed by two efforts successively of the muscles of the belly, indicates broken wind; but may also be seen in influenza in horses having heart-disease.

Deep breathing indicates water in the chest.

Retarded respiration usually attends diseases of the brain.

The breathing of most animals in health is through the nostrils, with the mouth shut, is noiseless and without any manifestation except that of the slow, prolonged heaving of the chest in the larger animals, and the still, even, and regular though quicker movements of the chest in the smaller ones. The latter can breathe either through the nostrils or the mouth, but the horse is prevented by the formation of the soft palate from inhaling by the mouth; he therefore has extended nostrils to admit a large supply of air. In disease the nostrils may be contracted or widely opened at each inspiration; the breathing may be too quick, short, labored, irregu-

lar, jerky, superficial, wheezing, or grunting, as if each breath caused pain, one side of the chest may fill out more than the other; the pressure of the hand on the chest may cause the animal to flinch or groan. Beside the cough, which may be barking, croupy, whistling, or dry and hard, the sounds which are heard within the chest in health, when one applies the ear to it, may be altered greatly in character, as also may the sound heard when the chest is smartly struck. These various sounds enable an experienced person to detect the character of the mischief within the chest.

Urinary and Generative System.—The urine and general functions of the urinary and generative organs are deemed of great importance in treating man, and are of equal relative value in animals. We give the most important deviations from the healthy condition of these organs, and the best methods of detecting the same.

In the female there may be discharges from the womb or from the vagina; the sides of the exterior opening may be swollen and red; the udder may be swollen, tender, hard, or inflamed; the teats may be cracked.

In the male the penis may be inflamed or ulcerated, the foreskin (the end of the sheath or covering which incloses the penis) may have warty or other growths on or within it.

The urine in either sex may indicate derangement by being either scanty; seldom passed; thick; whitish; darker than usual; strong-smelling; bloody; discharged in too large quantities; paler than usual; passed in small quantities, accompanied with straining, or in spurts with pain.

All that is passed in twenty-four hours should if possible be collected and measured, and an observation should be made as to whether more or less than the usual quantity is passed. A healthy horse will discharge from five and a half to seven and a half gallons in the time named. A part of the amount passed during different portions of the day should be tested as to its *specific gravity*. This test may be made as directed under the topic on "The Urine" in Chapter II of Part I. Placing water at 1000, the normal urine of the healthy horse will show a specific gravity of 1015.

Sometimes the urine contains albumen. This element is one of the constituents of the blood, and its presence in the urine is indicative of a serious disorder of the kidneys, and its early discovery is of great importance. To detect its presence follow the direction given on page 216.

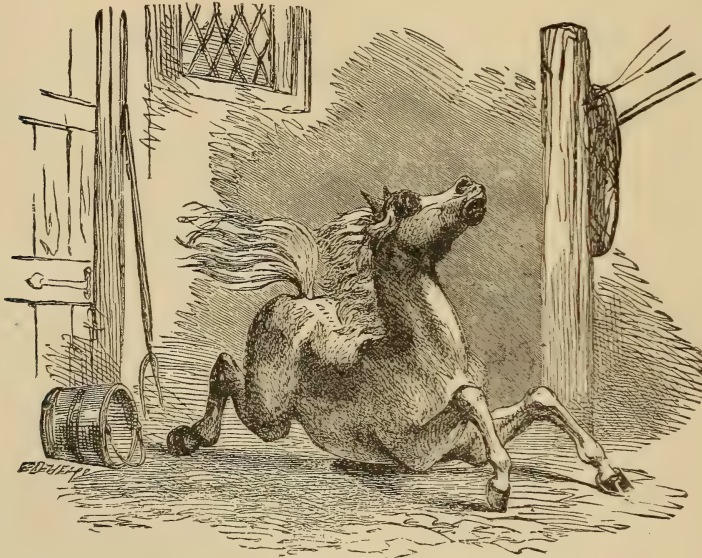
Occasionally, though not often, sugar is found in the urine of animals; this also indicates serious disease. It is known as diabetes, and when present the urine is passed in large quantities and has a clear, syrupy appearance and high specific gravity, reaching in some cases as high as 1030. When urine preserves this high specific gravity a test for sugar should be made, as directed on page 218.

CHAPTER II.

THE NERVOUS SYSTEM.

BRAIN FEVER.—INFLAMMATION OF THE BRAIN.

THIS disorder affects the brain or its membranes, or both, and is caused by over-exertion in warm weather or exposure to the sun on a hot day; insufficiency of water; very stimulating food; hard blows on the head. It is not common among horses. At first the symptoms are mild, including heavy eyes, with red membranes under the eyelids; loss of appetite; the head rests on some object or between the legs; sleep,



96. VIOLENT SYMPTOM OF BRAIN FEVER.

followed by sudden waking, staring, and dozing again. In a day or two there will be delirium with convulsions and fits of excitement; heaving flanks; wild, red, staring, bloodshot eyes, wide open; nostrils stretched out;

the breathing has a snoring sound; constipation; scanty urine. Then may follow dullness, convulsions, loss of consciousness, and death; or the horse may grow more violent before death, plunging about, pawing, biting and striking at every one near, with eyes standing out from the sockets, breathing and pulse rapid, and mouth hot and dry; the horse dashes violently against any object by him, falls exhausted, foaming at the mouth, sweating, and then dying. Symptoms of colic may be confused with these, but in colic *rolling* is prominent, as it is not here, and consciousness is not lost. The symptoms of brain fever, or "mad-staggers," should be carefully compared with those of *apoplexy*, or "sleepy staggers," found in the next section. But those of stomach staggers (see section on that disease) are most likely to be confused with the indications of brain fever. Hence the following distinctions made by Gamgee should be carefully noted:

INFLAMMATION OF THE BRAIN.

Very rare; never epidemic.

History indicates the cause to be some local injury; sometimes due to disease of the ears.

Originates and progresses slowly.

Usually very slight functional disturbance of stomach and intestines, indicated by costiveness.

High fever of a persistent type.

Stupor, listlessness.

No signs of colic, and rarely sweats.

Permanent uneasiness, ranging very slightly in intensity; delirium occasionally marked, but more frequently coma.

Symptoms yield slowly and with difficulty to treatment.

Consequences.—No tendency to ruptured stomach; suppuration often results, with marked symptoms of coma or blood-poisoning.

STOMACH STAGGERS WITH DELIRIUM.

A common disease; often epidemic.

History indicates the cause to be repletion of the stomach.

Comes on suddenly.

Marked signs of derangement of alimentary canal.

Febrile symptoms easily dispersed.

Symptoms of severe pain.

Colic, sweats, tremors.

Paroxysmal derangement and severe delirium.

When evacuation of the stomach is obtained the delirium disappears, and the animal soon recovers.

Consequences.—Death in a few hours in many cases; ruptured stomach, indicated by symptoms of vomiting.

TREATMENT.—The most common treatment is free blood-letting, with powerful cathartics. While this may give temporary relief, the depletion, even if recovery takes place, will often produce a useless animal, a fine-spirited horse scarcely ever becoming more than a broken-down hack. A much better treatment consists in arterial sedatives which lessen the fever and allay the inflammation. Among the best of these we mention

tincture of *veratrum viride* in five-drop doses every half hour to two hours until the pulse is diminished in frequency and the symptoms improve. Aconite is another good remedy for the early stages, especially for prominent and persistent fever-symptoms; hard, rapid pulse; labored breathing; inflamed nostrils and eyes. Belladonna is needed for dull, red, or wild eyes; vessels of the head swollen, and those of the neck pulsating; hot, dry mouth; plunging; raging; unconsciousness; increased paroxysms; convulsions in the legs; foaming at the mouth; the horse falls, sweats, lies a short time, and rises again with violent actions. Give opium for constipation; slow and full pulse; drowsiness; stupor; breathing slow; glassy eyes; nostrils spread. Gelsemium is desirable when the disease results from direct exposure to the hot sun; much weakness of the muscles; enlarged pupils. Give glonoine when the eyes protrude, with wild, staring look, *without the fury which indicates belladonna*. Arnica (putting ten drops of tincture in a pint of water, and giving a tablespoonful every hour, or oftener) is desirable when the disorder arises from a blow or other external injury. Bromide of potassa in half-drachm to one-drachm doses, or chloral hydrate in doses of twenty to forty grains, will allay the delirium and violent symptoms. Put cold cloths about the head, and give as diet a little hay or grass, with a free allowance of water, keeping the animal in a cool, airy stable and insure as complete quiet as possible.

APOPLEXY.—SLEEPY STAGGERS.

This is characterized by an impairment or loss of consciousness, feeling, and power of motion, caused by pressure on the brain from concussion, congestion of blood-vessels. We treat apoplexy and sleepy staggers together, though they are not the same. The former is much more rapid in its course, but calls for such measures as are here indicated, if time is given for any treatment.

Symptoms.—Dullness in the stable or harness; hanging of the head, often with some object as a support; sight and hearing dull; pulse and breathing slow; the horse takes food with his lips, dozes, awakens and renews eating; the dung does not pass frequently, and is scanty. As the disease increases, the horse may be startled by a sharp noise, as the cracking of a whip, but is unable to move; prefers to stand, the legs being in strange positions, pushed forward or back, or even crossed; falls, and cannot rise; hind legs sometimes convulsed; then the eyes protrude, staring fiercely and immovably, the pupils becoming enlarged; grinding teeth; swallowing difficult, or wholly stopped; muscles twitch; vessels of the neck are enlarged; nose cold; dung passes involuntarily; sometimes nervous excite-

ment and delirium, followed by stupidity. It is not attended with swelling of the stomach, as in the case of Stomach Staggers.

TREATMENT.—Treatment is seldom beneficial, but the remedies most likely to relieve are here given, and should be administered while the horse is kept perfectly quiet in cases of Apoplexy. Belladonna is desirable for wild, staring, immovable eyes, with enlarged pupils; twitching and jerking of the legs; involuntary passage of urine. Continue it some time. Give nux vomica for lessened consciousness; constipation; involuntary discharge of urine; inability to move the limbs; spasmodic jerks. Opium may be given for drowsiness, or deep sleep; irregular, snoring breathing; full, slow pulse; contracted pupils. In the case of Apoplexy, keep the horse perfectly quiet. When Sleepy Staggers are under treatment, do not work the horse at all in warm weather, and never to excess at any time. While the former is rapidly fatal, the latter may continue even for years, though the animal is not fit for breeding purposes after it has appeared.

PARALYSIS.

This is a loss of the power of locomotion, perhaps with loss of sensibility, resulting from a disorder of the nerves. It usually affects only the hind parts, but may be found in any portion of the body which is influenced by the nerves that are disordered. It is caused by attempts to stop a heavy load when descending a hill; by slipping up; by straining in a leap; by a severe blow on the back; by turning in a stall; by casting in the stable; by violent exertion during a surgical operation; by a fall in a race, in which case the horse lies a short time, rises slowly, is stiff, drags his legs, lies in the stable unable to rise, indicating great pain, quivering and slight spasms of the muscles of the hind quarters if there be a strain in the muscles; (if the spine be injured by such a fall, the muscles are quiet and soft to the touch). Another cause is the bringing of young horses to a sudden halt, throwing them upon their haunches.

Symptoms.—In slight paralysis, dragging of the hind legs; in other cases, inability to rise, excepting to receive a support on the front legs; loss of sensibility in the affected parts; involuntary discharge of dung and urine; mortification. It should be said, in general, that any portion of the body, however small, may be paralyzed.

TREATMENT.—The first aim in the treatment is the discovery and removal of the special cause, if that is possible, whether it be a derangement of the urinary, digestive or uterine organs, congestion, inflammation, or the pressure of some foreign substance on the brain. When paralysis is due to some inflammatory condition of the brain or spinal cord, with wild, staring

eyes, fever, and other symptoms of congestion, belladonna should be given. Hellebore is useful in cases marked by dry skin, retention of urine and dung, and when the disorder comes on suddenly. The various nerve-stimulants will be found valuable in protracted cases, and among them strychnia and nitrate of silver hold the first rank. They should be given in small doses, and be continued some time. Give *nux vomica* for stiffness of the back, and when the cause of the paralysis is not known; also when it results from insufficient food. When the cause is blows, contusions and other injuries of the kind, give *arnica*. *Rhus* is needed when the paralysis is caused by strains, running, jumping, or general over-exertion, or rheumatism. Of the last two medicines, a wash may be applied externally on the injured part.

Rub the affected part frequently. Give nourishing food. A current of electricity passed through the affected part will be of great value, but should be applied only by one who has been well informed.

EPILEPSY.—CONVULSIONS.

This is a disorder of the brain or nerves, marked by sudden fits. It is not frequent in the old horse, though it sometimes attacks the foal. If neglected, it will lead to much danger. Its causes are injury to the nervous system from disordered blood, brought on by exposure to the heat of the sun; difficult teething; grazing upon low pastures, chiefly when much dew falls; sudden change from poor to very rich food; protracted complaints, as fever and jaundice.

Symptoms.—The animal, having been perhaps in apparently perfect health, suddenly stops feeding, stares, trembles, staggers, falls, is seized with sudden and often severe convulsions; the eyes are much sunken, roll, or are distorted; affected breathing; teeth grind; mouth foams; muscles of the neck stiff and contracted; body twisted, perhaps violently; insensibility. Then the colt may rise, eat, and be in seemingly good health again. The fit may last several hours, and may recur in a few weeks, growing more frequent if not prevented, and many repetitions will probably cause death. This disorder is due to reflex irritation of the nervous system, and generally has its origin in some deranged state of the digestive tract, most cases being due to worms, the removal of which will cure the affection. Remove the cause, if possible, whatever it be.

TREATMENT.—For general convulsions, especially of the mouth, eyes and face; sparkling, red, staring, protruding eyes; difficult breathing; foaming mouth; limbs stiff and stretched out; loss of sensibility; involuntary passage of urine and dung; body stiff, and head drawn back during

the fit; falling down of the horse, and for irritation of the teeth, give belladonna night and morning for a while; then at night for several weeks, to prevent a recurrence. Should belladonna fail, give stramonium for the same symptoms, but resume belladonna for several weeks after an attack, five to ten drops of the tincture at night. Nux vomica is desirable when indigestion or constipation is the cause of the attack. When the cause is teething, the gum may be lanced and belladonna be given. If the animal is excitable and robust, give less nourishing food, and more exercise; if weak, tone up the system with nourishing food. During the attack prop the mouth open with a stick, to prevent injury to the tongue, and allow the animal to inhale ammonia slowly and with the greatest caution.

FITS.—VERTIGO.—MEGRIMS.

This disorder is a congestion of the vessels of the brain, marked by sudden faintness and insensibility, without convulsions, and with speedy recovery. One form (called megrims technically) is caused by pressure of the collar on the jugular vein, by which the blood is prevented from passing out of the vein. This form is most common in horses with peculiarly shaped heads; in those which carry the head high, with stiff neck, the nose being stiffly held out, so that running is difficult ("star-gazers"); and in such as carry the head on one side. Horses are predisposed to the complaint by the following (and perhaps these are the whole cause in some cases): Hot weather; high temper; hard work and bad feeding, or little work and high feeding; excessive exertion; pulling heavy loads uphill; bearing reins; sudden and tight reining.

Symptoms.—The horse may be in such good condition as to give no outward signs of liability to the disorder, even to the practiced eye of the veterinarian. All at once, perhaps on a hill at a critical moment of work, he shakes his head, perhaps his whole body; lays back his ears; throws up his head, with twitchings in the muscles of the neck; looks wild, his whole body trembling; nostrils and eyelids quiver; eyeballs are prominent; sometimes he then is quiet a moment and the fit passes away; at other times he reels, falls to the ground, lies nearly or quite insensible, and convulsed; urine and dung may be involuntarily passed; free sweating at the close of the fit. The attacks are periodical, and more often occur during hot weather, and at hard work.



97. AFTER REPEATED ATTACKS OF MEGRIMS.

TREATMENT.—When the premonitory symptoms appear, stop the horse, loose the collar, cover the eyes, and wet the head with cold water. Drawing a little blood from the mouth often relieves at once. Bromide of ammonia or potassa will be found useful as a preventive of further attacks, and should be given in doses composed of a half-teaspoonful of the salts in a half-pint of water one to three times a day. Stramonium is of the highest value when the symptoms are trembling, convulsions, rolling eyes, and sudden fall. Give once in two or three hours, according to the severity of the case. Aconite will immediately give relief if the disorder results from fatigue in hot weather; but should the attack not abate readily, it is probably of the nature of apoplexy, with like cause, and the section devoted to that trouble should be consulted. Nux vomica may be given if the dung is hard and the urine scanty. It may also be given at night, followed in the morning by sulphur, the alternation being kept up as a preventive of recurrence of the attack. In this case give ten drops of either.

The medicines selected should be continued, a dose a day, for at least a week after the attack. Avoid undue pressure on the veins by collars, bands, and tight reining; shade the top of the head when in the sun, keeping a sponge wet in cold water between the ears. If the animal is robust, give an abundance of moderate work and restrict the feed. After an attack, turn the animal out for a while, and insure rest and quiet.

CONCUSSION OF THE BRAIN.

Concussion of the brain results from a violent blow or other mechanical agency on the head, and may lead to serious disorders.

TREATMENT.—Apply arnica lotion freely, and give a dose of five drops of diluted arnica three times daily, or oftener if the severity of the case demands it. If inflammation ensues, treat as for Brain Fever.

CEREBRO-SPINAL FEVER.

The true causes of this disease are unknown, but it is probably due to various debilitating conditions, such as over-exertion, indigestible food, foul water, or sudden exposure to extreme heat.

Symptoms.—Many of these are similar to those in man: Sudden cramps of the voluntary muscles of the neck and hind limbs, trembling of the whole body, and when the attacks come on slowly there is extreme dullness and lassitude for many hours, with paralysis of the throat and lips, causing a great flow of saliva. General paralysis follows these conditions, and eventually the animal is unable to stand, and lies prone upon its side

with lax and extended limbs. The usual symptoms of coma and stupor appear. Recovery may ensue in mild forms of this disease. A good, but not excessive appetite throughout is a favorable sign. The pulse, at first slow and soft, becomes weaker and more rapid in the latter stages; external temperature cool; bowels costive, with involuntary voiding of urine with no change in its character. Often there is tenderness of the spine, which may be detected by pressure.

TREATMENT.—In some cases little can be done in the way of treatment. Unless there is complete paralysis, the patient should be placed in as comfortable a position as possible, and be fed on laxative food, as bran-mashes and like articles, with cold water to drink. The spine may be rubbed with stimulating liniments, or alternate applications of hot water and ice. The limbs should be kept warm, and frequently given a hot mustard-bath. When the fever is high and the pulse rapid, *veratrum viride*, in three to five drop doses, should be given until the heart's action is controlled. If there be great coldness of the limbs and ears, quick pulse and hot mouth, *aconite* may be given in five to ten drop doses of the tincture. Bromide of potassa in twenty-grain doses will be found useful in the early stages to allay the pain and quiet the animal. It may be given in alternation or with either of the above remedies. Should the horse be unable to swallow, the medicine can be put on the tongue or injected in a watery solution under the skin. After the acute symptoms have subsided, mild tonics will be found useful; if paralysis supervene, treat that.

NERVOUS FEVER.

This is rare, and is caused by insufficiency of space allotted to the horse in his stable. In such case, the stable being closed during the night or during bad weather, the air becomes impure and produces the fever.

Symptoms.—Shivering; cold legs and skin; no sweats; pulse from 70 to 100, small, thready, and growing very weak; respiration quick and short, about 60 per minute, with working of the wings of the nostrils; great weakness and dejection; increased flow of saliva; tongue and membranes of the mouth seem congested; difficult swallowing; glands not swollen; pain, as shown by an anxious eye; pawing; looking at the flanks; attempts to lie down, the horse immediately resuming the standing posture, with the head on the ground or under the manger; urine scanty and high colored; bowels constipated, or pass a few soft balls covered with slimy mucus; at an early stage, wind in the stomach, with frequent belching; pressure near the stomach gives pain; the action of the heart grows feeble, fluttering, and then silent, or hardly perceptible; breathing may be

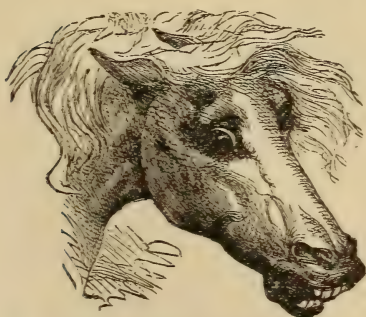
labored and deep; perhaps dysentery or diarrhœa; frequent passage of wind; straining; dung chiefly mucus, tinged with blood; in fatal cases the horse walks around, knocks his head against objects about him; lies down; tries to rise, but fails. The animal has pains in the abdomen, but does not roll and often rise as in colic.

TREATMENT.—For the shivering, give aconite four times an hour, for one hour in five-drop doses, then lengthen the interval between doses. For the symptoms in general, give nux vomica every quarter or half-hour, according to the severity of the case. If the abdomen be not swollen and full of wind, give it once in two hours. If the swelling of the abdomen be great, and not relieved by nux vomica, give ammonium causticum or cocculus as long as the distension lasts, the dose being ten drops in a wine-glassful of water every twenty minutes. Arsenicum will be found useful when there are scouring of the bowels and a low state of the system; give one-hundredth of a grain, or three to five drops of Fowler's Solution.

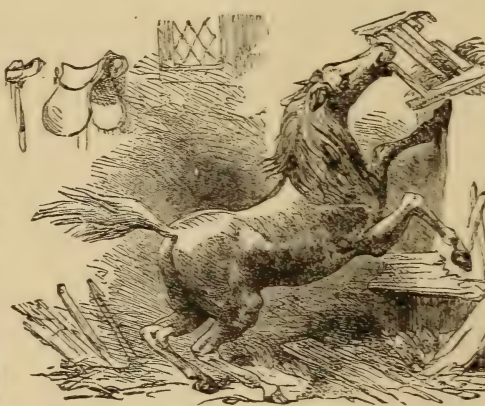
MADNESS.—RABIES.—HYDROPHOBIA.

This is never spontaneous with the horse, but is always occasioned by the virus of madness, usually received from an infected dog, whether the dog bites the horse or licks a wound, or the horse in some way swallows the saliva of the dog. When a dog is around the stable showing the symptoms of madness (see under Madness in the Dog), the matter demands immediate notice.

Symptoms.—Though the disease usually appears in about



98. FACIAL EXPRESSION IN HYDROPHOBIA.



99. VIOLENT SYMPTOMS IN HYDROPHOBIA.

three days after the infection from a dog, the horse should be guarded and treated for six weeks, if the disorder do not sooner occur. At first, among

the symptoms, the upper lip quivers; head down; anxious and sad look; legs, ears and mouth cold; staring coat; loss of appetite; eyes closed, or have an inquiring look, or become suddenly fierce; shivering skin; eyes, jaws or limbs become convulsed. Then there occur great restlessness; violent convulsions; wandering eyes; dread of cold air; aversion to light; prominent sexual excitement in stallions and mares; tendency to bite any object; great thirst; violent snorting; grating of teeth; change of voice when neighing; foaming mouth, with phlegm discharged in strings; kicking; pawing; plunging, or flat prostration on the ground or floor, the legs and head dashing about; tearing of the flanks and fore legs; partial paralysis of hind parts; increased convulsions in death. Madness may be confounded with inflammation of the brain, but in the latter consciousness is lost, while it is not in the former.

TREATMENT.—If the bite or infection be known at the time, wash the wound, if there be one, with cold water (into which it is better to put a few drops of belladonna), removing as much of the virus as possible. Then thoroughly cauterize the wound, as directed for Hydrophobia in the Dog, cover the bite with bandages saturated with water and belladonna, and continue the application as long as any traces of the wound remain. Give five drops of belladonna four times a day for six weeks. If a mad dog has been among a number of horses, even when it is uncertain whether he has bitten any, treat all with the belladonna, as directed, for ten days or two weeks.

When the active symptoms have appeared, it is best to kill the horse at once, in view of the improbability of a cure and the danger to attendants. See Hydrophobia in Chapter III, Part I, and in succeeding parts.

INSANITY.

This is generally not distinguished from madness, but that it exists in horses as well as in man there is good reason to believe.

Symptoms.—These are a perverted or depraved appetite; change in the affections and temper; viciousness. Many horses which suddenly become vicious and violent are affected with insanity, and not with obstinate, willfully bad temper. The horse may be permanently afflicted, when it is easy to distinguish the disorder from madness; or he may be only temporarily insane, with an absence of some of the more special symptoms of madness, recovering after the cause (inflammation, abscess of the brain, thickening of the membranes of the brain, etc.,) has disappeared.

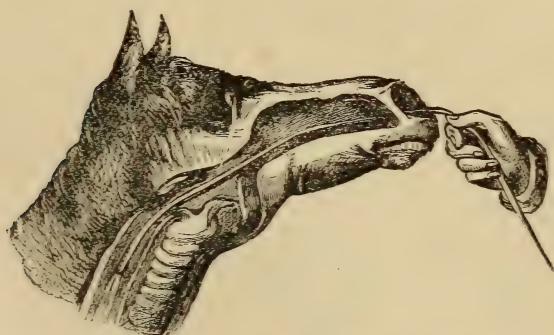
TREATMENT.—Give belladonna when the disorder results from an affection of the brain, when the symptoms indicating this medicine, as

mentioned under belladonna in inflammation of the brain, occur. Give stramonium for the symptoms indicating belladonna, if the latter remedy fails. Hyoscyamus is beneficial for great excitability, enlarged pupils, and sleeplessness. Put ten drops of the chosen remedy in a pint of water and give a wine-glassful once in from one to six hours, according to the severity of the case. Chloral hydrate or bromide of potassa will be found useful in violent cases, to produce quiet, twenty to forty grains at a dose.

LOCK-JAW.—TETANUS.

This is a general or partial contraction of the muscles. It is more common in old horses. The causes we divide, for convenience, into two classes:—(1) Exposure to cold after clipping; snow and cold winds; excessive heat; severe weather of any kind; over-exertion; worms in the bowels; bots in the stomach; disordered digestion; inflammation of the stomach, bowels, lungs, or liver; advanced stages of stomach staggers (which see). (2) Wounds, especially those that are not inflammatory, such as result from clipping; docking; nicking; castration; cutting of abscesses; bruises; pricks in shoeing; open joints; broken knees; nails in the sole of the foot; dirt; rust, or points of instruments in wounds; galling of saddle or harness; severely crushed bones. Slight wounds and injuries most often lead to it because they are too much disregarded. Horses are rendered more liable to lock-jaw by low condition, cold weather, starvation, and other debilitating conditions.

Symptoms.—Though these may occur within a half-hour, especially when the cause is found under (1) above, the effects may not come on,



100. MODE OF FEEDING IN CHRONIC LOCK-JAW.

when resulting from a wound, until the wound is nearly healed. At first, the horse seems to be in good health, neighs when a person approaches, as if hungry; appetite usually good throughout; difficulty in taking food with the lips; champing of jaws; grinding of teeth; mouth closed,

or so nearly so that the horse can not feed; free discharge of saliva; any excitement causing twitching of the muscles of the neck and face; perhaps

colic and constipation. In later stages, the mouth is firmly shut, the muscles of the lower jaw being contracted and hard; head raised; neck stiff and immovable; nose stuck out; nostrils enlarged; breathing loud and quick; pulse hard, frequent, and unyielding; eyes wide open, fixed, drawn backward into the socket, with the white drawn over the eyeballs; lips firmly drawn across the mouth, exposing the teeth, which are clenched or slightly parted; saliva drops from the mouth; ears erect, stiff and pointed forward; the look is distressed and frightened; as the disease progresses the head is fixed in one position; neck stiff on one or both sides, drawn to one side if that only be affected. The limbs are not usually involved at first, but later their muscles are hard and stiffened, the feet being placed wide apart, the horse standing fixed to one place; any movement causes great pain, all joints appearing inflexible; the upper muscles of the neck contract, producing "ewe-neck;" belly hard and tucked-up; tail elevated and trembling; the alimentary system is involved, causing costiveness and perhaps scanty urine; swallowing difficult, if the horse can indeed suck up liquid food. Any excitement exaggerates the symptoms. Lock-jaw may not commence with spasm of the jaws. It often begins with contraction of the muscles of the hinder extremities and extends to the whole body, becoming severe, if not fatal, when it "locks" the jaws.

TREATMENT.—In the early stages a cure may often be effected by giving a small piece of stale bread saturated with fifteen to twenty drops of tincture of camphor, followed by another dose in an hour, another two hours later, a fourth four hours later, or more frequently if the urgency of the case demands it. Arnica may be used instead of camphor for cases caused by mechanical injuries. Give aconite for early stages of cases resulting from exposure to cold. Nux vomica is the leading remedy and should be given when the spasms are first discovered; it is useful when lock-jaw results from disorders of the alimentary canal; for twitchings and jerks; increase of spasm by excitement; stiffness of muscles; head drawn upward and backward, and the body arched and bent rigidly backward. For symptoms indicating nux vomica, strychnia is invaluable, *but must be given cautiously, alone*, and never more than one-fifth of a grain at once, the usual dose being one-hundredth of a grain. Arnica may be applied externally to wounds, pricks in shoeing, and sores from nails in the sole of the foot; in such cases it may be given internally as well, alternated with nux vomica. Gelsemium is very good for shivering, great distress and complete loss of muscular power. To relieve the spasm chloroform internally, in twenty drop doses, or by inhalation, will be of great service, inhalation being the more efficacious. Sulphuric ether may be used in the same manner as chloroform. If all other remedies prove ineffectual,

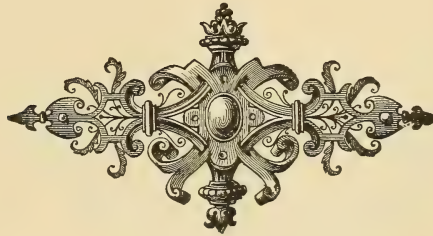
twenty drops of nitrate of amyl may be given by inhalation. Put it on a small towel and let it be *slowly* inhaled by the horse. It may be repeated in two or three hours if no perceptible effect has been produced.

The slightest excitement will aggravate the distress. Loud noises, exposure to the sun's rays, angry words, the presence of spectators, and even the rustle of straw, are excitants. Hence, let the attendants be as few as is consistent with proper care. Let the stall be comfortable and removed from annoyances, with but little light. Chop the bedding into short pieces, to allow free movement of the feet, changing it often; have plenty of dry clothing, using the amount required by the circumstances, and changing frequently on account of the free sweats incident to the disorder. If a prick in shoeing or stepping on a nail be the cause of lock-jaw, remove the shoe, pare and rasp the foot thin; remove all foreign substances from the wound; squeeze out the pus or watery matter; then make a poultice of bran soaked in sixteen fluid ounces of hot water, into which has been previously put one ounce of tincture of arnica. Apply this to the wound two or three times a day. Such a poultice may also be put upon the spine. Tincture of lobelia, aconite or belladonna, may be used in place of the arnica. When a flesh wound has caused the disease, a warm arnica-wash may be applied to the wound, one ounce of tincture of arnica to sixteen ounces of hot water. Aconite or belladonna may be used instead of the arnica, if the symptoms indicate. Soak a sponge in this wash and bind it to the wound with linen strips, fixing the ends of the latter to the skin with glue or collodion, taking care that the lotion does not drain out of the sponge so as to moisten the glue on the ends of the strips. Do not try to force open the jaws that are firmly set. If food can not be taken naturally, and if suction be impossible, broth, milk, or rich gruel may be injected with a syringe into the bowels through the rectum. Frequent and careful rubbing of the body is very useful for stimulating the action of the skin and reducing stiffness of the muscles. Back-raking with a well-greased arm and hand should be carefully applied, as it is very useful.

STRINGHALT.

This is a peculiar irregular and spasmodic action of the muscles, due to some nervous disorder that eludes accurate discovery, causing a singular movement of the hind legs; the fore legs are seldom affected. The hock is bent, and the leg is lifted high in locomotion, with a twitching or convulsive action in picking it up. It is not lameness, and diminishes or wholly disappears after the horse has been in motion a while. It increases as the horse grows older, and in later years interferes seriously with traveling.

TREATMENT.—This disease is by many deemed incurable, but it is not necessarily so. Give a teaspoonful of *cimicifuga* night and morning, alternating with *nux vomica*. For constipation, twitching or jerking of the limbs or sets of muscles, impaired appetite, and other marks of disordered stomach, with irritable temper, give ten drops of *nux vomica* three times a day. A lotion of *rhys* or poison oak may be applied with benefit.



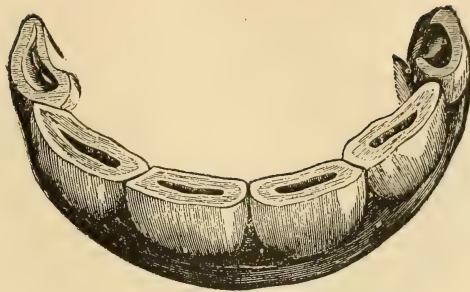
CHAPTER III.

THE DIGESTIVE SYSTEM.

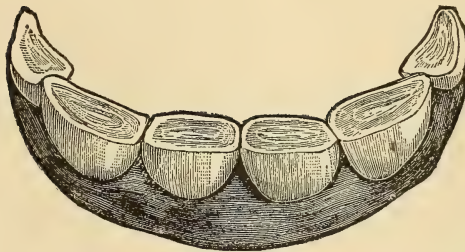
THE TEETH.

THE general treatise on the digestive organs is found in Chapter IV of Part I, but the importance of the teeth of the horse as an index of age calls for a special notice and copious illustration. Points in determining the age are the following:—There are two sets of teeth, the temporary or milk-teeth, and the permanent, the same number being on each jaw.

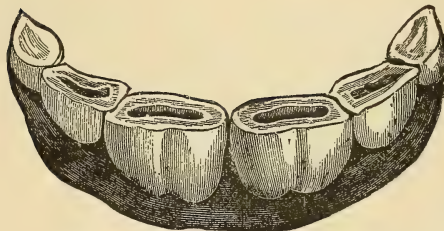
The *temporary* are twelve front teeth, or incisors, and twelve molars, or grinders. The *permanent* set has twelve incisors, twenty-four molars, and *four canines or tushes in the male*. At birth, or within about ten days afterward, the two central incisors are found, and about the same time three molars on each side of either jaw appear; at six months, four more middle incisors are seen; about the eighth month, two corner incisors on each jaw; at one year, there is the full temporary set. During the second year are cut two molars on either side of each jaw—eight in all—making twelve incisors and twenty molars, of which twenty-four are temporary and eight (molars) permanent. At two years and a half two permanent incisors displace the two temporary central ones, and are distinguished by increased size and a dark mark in the center. Between three and four years the next incisors are displaced by permanent ones. Between four and five, the corner incisors are likewise changed, and about this time the twelve temporary molars are replaced by permanent teeth, to which are added the remaining molars of the *mare's* mouth. At about four and a half, the four canines or tushes of the *horse* are seen and become fully grown at five. At six the central incisors of the *lower jaw* lose the dark mark in the crown which appeared at about three, perhaps a little before. At seven, this mark disappears from the middle incisors, and at eight is worn from all of them. At ten, eleven and twelve, the mark disappears from the central, middle and corner incisors respectively of the *upper jaw*. We thus have a fair index to the age. The teeth becoming longer, their edges triangular (tushes round and blunt), dishonest men attempt to practice various impositions, by



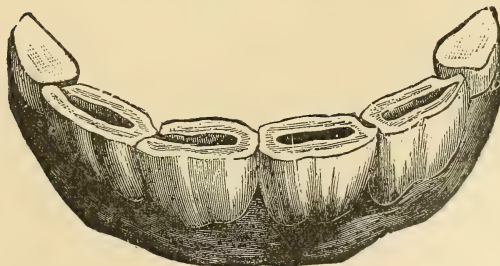
101. ONE YEAR.



102. TWO YEARS.



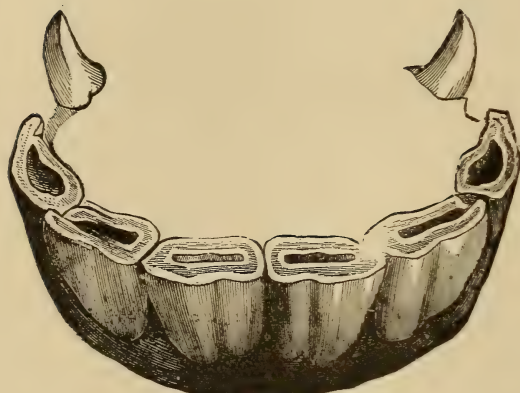
103. THREE YEARS.



104. FOUR YEARS.



105. FIVE YEARS.



106. SIX YEARS.



107. SEVEN YEARS.



108. ANOTHER VIEW AT SEVEN.



109. EIGHT YEARS.



110. NINE YEARS.



III. TEN YEARS.



112. ELEVEN YEARS.



113. TWELVE YEARS.



114. SIXTEEN YEARS.



115. TWENTY YEARS.



116. TWENTY-FOUR YEARS.



117. EXTREME AGE.

changing their appearance—"bishops" the teeth. For instance, a three-year old may be made to appear older by drawing the teeth which would soon drop out, thus allowing a more rapid growth to the permanent teeth; or a cavity is cut into the surface of the corner teeth and darkened with a hot iron or other means, to make a horse look younger.

COLIC.

This should not be mistaken for inflammation of the bowels (enteritis), or for stomach staggers. The following table will aid one in distinguishing it from the former, as well as from other disorders.

ENTERITIS.	COLIC.
The attack comes on gradually; restlessness and fever-symptoms being present five or six hours before the violent symptoms.	The pain comes on suddenly, without any symptom, and is violent from the first.
Pain continuous, with but slight intervals of comparative ease.	Pain comes on in paroxysms, with marked intervals of ease.
Pressure on the abdomen gives pain.	Pressure or friction on the abdomen gives relief.
The pulse quick and full, or hard and thready; as the disease advances, rising to double the number of beats, or even more.	The pulse not affected, except during the paroxysms of pain, or after the latter has continued some time. It is thus variable; sometimes natural, at others small and feeble, then full and quick.
The extremities cold.	The extremities warm.

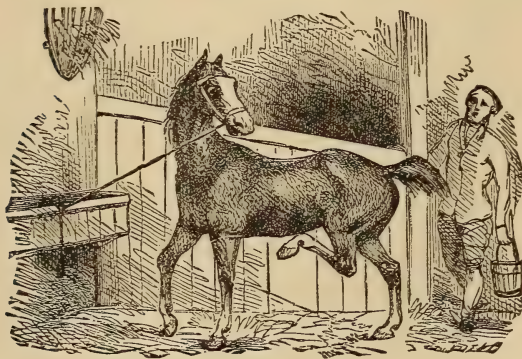
Colic is of two kinds, the *spasmodic* and the *flatulent* or windy, and the two kinds require separate description and treatment.

SPASMODIC COLIC.

This form is caused by impure air and irregular exercise, with dry, poor food and insufficient water. It is aggravated or excited by sudden chills, chiefly after hard work; free drinking of cold or mineral water; constipation; gritty lumps in the intestines; violent purging; green food in undue quantities.

Symptoms of Spasmodic Colic.—Severe pains in the abdomen coming on in paroxysms; the horse, in apparently previous good health, turns his nose toward the flanks with a frightened look, paws, and is uneasy. As yet the pulse is natural; an appearance of ease is now observed for a short period, then the symptoms return and are aggravated; the horse stamps

and kicks at his belly; starts to lie down, but again stands up; suddenly snatches up a leg and slowly lets it down again; walks around uneasily, occasionally dashing his head on some object; stops in the midst of mastication, resuming the eating as usual during the temporary ease, shaking him-

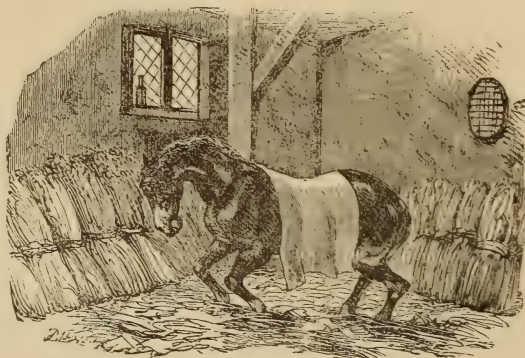


118. FIRST STAGE OF SPASMODIC COLIC.

self at these times; draws the legs to the belly, or stretches them out rigidly; sometimes rolls violently on the back; puffs at his belly; if the attack is often repeated, he falls with a grunt, and stretches himself at full length, lying quietly until another spasm occurs, when he will rise or roll, resting his back against the wall; the pulse during the pains is hard or wiry, and

small, but is full and soft during the periods of ease; as the disease advances the eye grows wild and haggard, the pulse imperceptible, the breathing short and hurried, the sweat clammy and cold; the horse dashes his head around until it becomes cut and swollen. When death is near, the bowels are constipated and the urine stopped.

TREATMENT OF THE SPASMODIC FORM.—Give aconite (every ten minutes, gradually increasing the intervals to thirty minutes) when the colic results from chill, or drinking cold water when the horse is heated; for frequent but fruitless attempts to pass dung or urine; and when the abdomen is tender, swollen and rumbling. Give nux vomica as often and at the same intervals as aconite, when the disorder is caused by over-eating or unsuitable food; when there are constipation, hard lumps



119. SECOND STAGE OF SPASMODIC COLIC.

and no urine resulting from attempts at evacuation; and for great pain, indicated by the animal lying down, being restless, and frequently looking

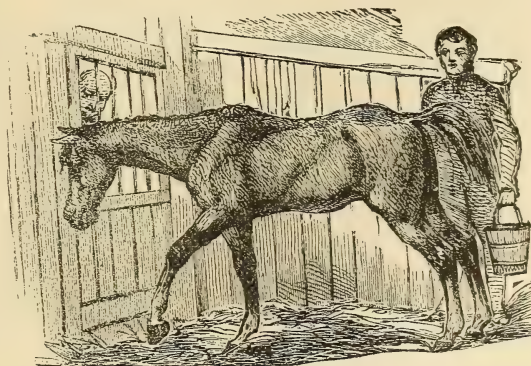
at the side. Cantharis is serviceable for stoppage of urine; if it fails, give hyoscyamus. Opium is valuable for constipation when the dung is scanty and blackish, in which case injections of soapsuds should also be administered. Nux vomica and opium may be alternated for obstinate constipation which tends to keep up the pain of colic.

A very superior remedy when the colic results from eating green food, when the belly is swollen with gas, and watery dung and wind are expelled, and when the horse rolls violently in severe pain, is colocynth. It should be given in five-drop doses every half-hour until relief ensues. Arsenicum should be given when there is much wind, and when the colic is occasioned by imperfect digestion, bad or excessive food, or drinking cold water. Use injections of warm water and soap, as they are preferable to back-raking. Apply cloths wrung out in quite warm water in severe cases (See cut 123). Keep the horse in a loose stall, with an abundance of straw for him to roll on as he is inclined, confining him thus without exercise until the attack passes off. After the violent symptoms have subsided, give gentle exercise and soft food for a few days.

WINDY OR FLATULENT COLIC.—This form arises from excessive or bad food, especially green clover; a hearty meal eaten greedily after hard work or a long journey; irregular exercise; or anything that promotes indigestion.

The Symptoms of Windy Colic are similar to those of the spasmodic, with the addition of frequent passage of wind, and a drum-like enlargement of the abdomen by gas.

TREATMENT OF THE FLATULENT FORM.—Nux vomica, ammonium causticum, aconite, arsenicum and colocynth are valuable remedies. Cocculus is best for all cases of windy colic when it does not result from eating excessively, or the taking of green food. Rub the abdomen with the hand with considerable pressure, and give warm injections. Immediate relief will often follow a drench of a pint of dilute vinegar and a thimbleful of powdered chalk, well shaken and given quickly before it wastes by fermentation. In other respects, observe the directions above on the general care in spasmodic colic.



120. FIRST STAGE OF FLATULENT COLIC.

INFLAMMATION OF THE BOWELS.—ENTERITIS.

Inflammation of the muscular coat of the intestines is caused by exposure to cold and wet; excessive exercise, with sudden chill; drinking cold water when heated; over-feeding; want of work; bad treatment or neglect of colic; strong purgatives; continued constipation; rupture in the intestines.

Symptoms.—These are similar to those of colic, from which they should be studiously distinguished. (See the table of symptoms under Colic.) The pain is continuous, not paroxysmal; pulse hard and small, ranging from 60 to 100, and in extreme cases imperceptible or thready; mouth hot, and usually dry; nostrils expanded, red and hot; bowels very much bound; urine stopped; abdomen tender and tucked up; extremities cold; copious sweats, becoming cold and sour-smelling in latter stages; breathing quick and short; the horse paws; lies down and rises often; strikes his belly; looks at his flanks as if in great pain; as the pain increases, the horse drops, rolls, and lies on his back; these symptoms, after some hours, may be followed by a subsidence of pain, the body being still covered with a cold, clammy sweat; the eye becomes lusterless; the lips hang; the mouth is very cold; tremor occurs in the muscles, particularly in the extremities. These symptoms indicate an inflammation of the outer



121. GENERAL SIGN OF ABDOMINAL IRRITATION.



122. PRESSURE TO DETECT ENTERITIS.

muscular coat. An inflamed inner coat will be marked, in addition to most of the above, by warm ears and extremities; discharge of liquid, frothy dung, sometimes bloody; feebler and quicker pulse; the taking of breath is short, and its expulsion checked and then completed with a groan. In extreme cases the horse totters, knocks his head on various objects, falls, and with a few struggles dies.

TREATMENT.—Treatment should be given as soon as possible, and since the disease is most likely dependent upon some derangement of the mucous surface and the cellular tissue under it, it should not be entirely

local, but general as well. Aconite is by far the best remedy, and if administered in the early stages, will usually effect a cure. It should be continued as long as the pulse remains hard, and the pain severe. After giving several doses fifteen minutes apart, it should be administered every half-hour, or in alternation with another remedy if the pulse continues hard and quick. If the constipation is inflexible, give *nux vomica*, followed in fifteen minutes by aconite, and continuing the alternation in this manner. Give belladonna, *not in the first stages*, as a remedy intermediate between aconite and arsenicum, when the pulse becomes feeble or thread-like; the eye red and wild-looking; the animal delirious; prostration; mouth and body yet warm; belly swollen and tender; great pain. Arsenicum should be given when the inflammation has resulted from cold, drink taken when the body is warm, or from irregularity of feeding; also, if there be rapid prostration, restlessness, cold and clammy sweats, hurried and weak pulse. Colocynth is desirable, perhaps in alternation with aconite, when the large intestines are mainly affected, and there is wind in the belly, with ineffectual attempts to pass dung. If there be great thirst, tender belly, prostration, shivering, perspiration, watery, offensive dung, passed with straining, sometimes slimy and bloody, *mercurius corrosivus* will be found an efficient remedy. Apply to the abdomen cloths wrung out of water as hot as the horse will bear, *without scalding or blistering*. Warm injections of starch will be of assistance. Apply to the legs mustard to restore circulation. Never resort to bleeding. Give gruel freely. An antidote must be given in cases resulting from poisoning, upon which consult the treatment given for the poison in question, to which reference will be made in the list on page 359. Remember, however, that *emetics are not to be given to the horse*. Give mild food until all irritation has subsided.



123. APPLICATION OF HOT CLOTHS.

DIARRHŒA.—SCOURING.

This is a looseness of the bowels caused by unwholesome food, mineral or brackish water, strong cathartics, atmospheric agencies, derange-

ment of the blood, congested lining membrane of the intestines, nervous excitement, worms, derangement of some organ, as the stomach or liver, influenza or other disease.

Symptoms.—Frequent passages of dreggy or watery dung, without the blood which is common in dysentery, with or without griping; sometimes straining and discharge of wind; pawing, rolling and looking at the flank; discharges occasionally black and very offensive, but usually not offensive, and containing small pieces of hay; appetite lessened or lost; pulse quick, weak and irregular, and breathing hurried, though neither is much affected in *early* stages; straining increases with the advance of the disease, with more wind passing. In severe cases there will be offensive breath, cold skin and extremities, and rapid decline of flesh and strength.

TREATMENT.—When diarrhœa results from taking cold, or when congestion of the mucous membrane is supposed to exist, aconite will allay the inflammation. This remedy may be given in connection with mercurius if the discharges are slimy and offensive, and the breath is foul. Sometimes the disorder follows constipation, and the discharges will then first be composed of dry, hard balls, then loose, and thus alternating. In such a condition nux vomica will be invaluable. In painless diarrhœa, with watery discharges, cold skin and shivering, give half-teaspoonful doses of tincture of camphor every hour until relief is afforded. Give arsenicum or phosphoric acid for watery, slimy, greenish or brownish diarrhœa, with or without griping pains; also when the animal is weak, thin, with poor or no appetite; and for diarrhœa in fevers of a typhoid nature. Cinchona is very useful in cases induced by hot weather, and not of an inflammatory character; for chronic cases, with painless discharges, loss of flesh, appetite and strength; for intermittent cases, and as a tonic after the acute symptoms have disappeared. Give veratrum album when the discharges are altogether watery and involuntary, the pulse collapsed or almost imperceptible, the nose, mouth and ears cold, parts of the body moistened with cold sweat, the expression haggard; thirst, and occasional griping pains; administer it every quarter of an hour at first and increase the intervals as the diarrhœa declines. Use mercurius corrosivus every half-hour when the dung is mixed with blood, or is merely mucus with wind and straining. If there is much pain, administer colocynth. Large draughts of linseed or olive oil will clear the bowels of any irritating substance, and they should be followed by starchy and mucilaginous drinks. Astringents and opiates should be given with caution, and never when there are any irritating substances in the bowels. Give three or four times a day three table-spoonfuls of flour paste in a quart of water, or more water if the horse is thirsty, especially if the disorder has resulted from an overdose of physic; clothe

the body and legs warmly; omit all exercise for two or three days, and when the appetite returns feed boiled oats or barley.

DYSENTERY.—BLOODY FLUX.

Inflammation of the membrane lining the large intestines occasions an unusual secretion of mucus, usually tinged with blood, attended with straining, and this is called dysentery, or bloody flux. A fever of a low typhoid nature may cause it, or extreme heat, or indeed anything that depresses the nervous system may be the cause, as well as exposure to cold and wet, sudden chill, diseases of the skin and breathing organs, bad, excessive, or insufficient food, low, marshy grazing, oppressive, dry, sultry weather long continued, and it may result from diarrhœa. It is not common among horses, except in the chronic form.

Symptoms.—These are in some respects like those in diarrhœa, but it will be observed that the disease under question is marked by a mixture of *blood* and mucus in the dung; pulse small and quick; great thirst; quickened breathing; at first, shivering and fever-indications; appetite gone; slight griping; frequent straining; pain in belly; end of rectum sometimes protrudes in straining; loss of spirits. When the discharges are occasional, following marked constipation, and consist of a small hard ball or two, with wind and much straining, the disease is true dysentery; when they are dreggy, it is called diarrhœa, the discharge not being attended with straining.

TREATMENT.—Dysentery is often the result of clogging or impaction of the bowels, giving rise to inflammation, and in such cases this cause is to be removed by giving large draughts of olive or linseed oil, together with full injections of starch-water. When this has been effected, and the disorder is still accompanied with severe straining, protrusion of the rectum, discharges of blood, or of slimy, bloody mucus, with hardened dung, or with discharges nearly black and mixed with tough lymph, and frequent and straining attempts to pass urine, mercurius corrosivus will be invaluable. Give nux vomica if the dysentery is attended with constipation at times, with frequent passage of one or two hard balls, straining and unsuccessful efforts to pass urine and wind. Phosphoric acid is very serviceable for dysenteric diarrhœa, with fevers of a typhoid character. Give arsenicum if the dung is liquid, passed nearly involuntarily, bloody, offensive, and greenish, or nearly black; rumbling and windy bowels; loss of appetite, strength and flesh; skin and extremities cold; straining and passages of wind; for debility resulting from bleeding, purging, and such diseases as typhoid fever. As food give mashies of bran, crushed wheat or

barley, or of roots. Boiled linseed, starch-water or barley-water should be mixed with the drink to allay pain and irritation.

CONSTIPATION.—COSTIVENESS.

This is a stoppage of the bowels, usually affecting the rectum. It is, properly speaking, a symptom of some disorder, but as its neglect may lead to inflammation of the bowels, it is here separately treated. It is caused, in addition to different specific disorders, by old age, inability to pass the dung which is in the rectum at birth, indigestible food, such as old, rough grass which clogs the rectum, deficiency of water, insufficient exercise, imperfect mastication, lack of digestive fluids, as the saliva and bile.

Symptoms.—Impaired appetite, indications of pain in the abdomen, straining efforts to empty the bowels, hardened dung, restlessness and irritability.

Treatment.—*Nux vomica* and sulphur will almost always afford relief, a dose of the former being given at night and one of the latter in the morning. Give regular exercise, boiled food, less oats for a while, and injections of warm soap-suds. *Back-raking* is dangerous. The bowels are sometimes obstructed by the lower part of the small intestine slipping down into the upper end of the larger one (invagination), and in such a case powerful cathartics are extremely dangerous, and indeed should never be used. If free injections will not relieve this latter condition, the abdomen may be opened by skillful hands, though it is a hazardous operation. Relief is sometimes afforded by jumping from a bank about two feet high. Manipulating, by the hand in the rectum, has produced good results.

INFLAMMATION OF THE STOMACH.—GASTRITIS.

This is of two kinds, which, for the sake of convenience, we will call *special* and *general*. The distinction should be carefully made, as the treatment of the one differs from that of the other.

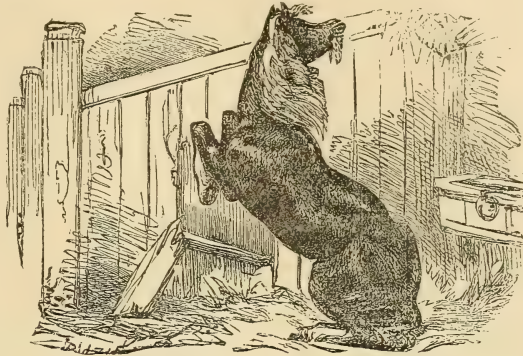
THE SPECIAL FORM.

This is caused by some vegetable or mineral poison or animal irritant taken into the stomach, especially by too much aloes, oil of turpentine, corrosive sublimate, arsenic, lead, copper, antimony, ammonia, cantharides, oxalic, nitric and sulphuric acids.

Symptoms.—Quick pulse (80 per minute), steady, small, perhaps imperceptible; thirst usually great; partial sweats; cold extremities; saliva

flows from the mouth; indications of dysentery, such as straining and passage of bloody mucus; weakness; perhaps paralysis; increasing pain in later stages; in cases of vegetable poisoning, stupor and great drowsiness, enlarged pupils, paralysis, snoring, breathing; in mineral poisoning and animal irritants, nausea, pains in belly, horse looks at his left flank, paws and rolls. In all extreme cases the horse dashes against the walls, or throws himself upon the ground, becoming delirious, and dies.

TREATMENT.—In all cases the poison must be removed, or neutralized by antidotes. For *metallic* poisons, as arsenic, corrosive sublimate, verdigris, lead, copper, etc., give white of egg in water, soap-suds, or sugar and water, adding iron-rust for arsenic; for lead, give Glauber's or Epsom salts. For *acids*, as sulphuric, prussic, nitric, etc., give soda, chalk and water, ammonia, or magnesia. For *alkalies*, such as ammonia, salt of tartar, etc., give lemon juice and other acids. For any case, give linseed-tea, starch-water, or arrowroot. Injections are serviceable. Generally give mild food, and in small quantities, during treatment and some time thereafter.



124. SYMPTOM OF ACUTE GASTRITIS.

THE GENERAL FORM.

This type is caused by a subtle poison in the air, acting on the brain of such animals as are predisposed to disease by general debilitating agencies, and especially by impure air from improper ventilation, the latter being an independent cause; by the coating process attended with some chill or nerve-disorder or fever. All of these operate on the nerves of the stomach and neighboring organs, producing inflammation.

Symptoms.—Pulse sixty to eighty per minute, small and weak, though soft and full at the beginning; foul and slimy tongue; saliva increased; appetite wholly lost from the commencement; limbs swollen and hot, or cold and not swollen; great weakness, the horse walking with legs wide apart, or dragging them; membrane of the mouth deep red, yellow, or of a brick-dust shade; eyes nearly closed, water penetrating the lids; sometimes a mucous pus instead of tears; the coat may be dry and loose, com-

ing off easily when touched, and standing up when eruptions occur, which is not unfrequently the case; no sore throat and no discharge yet, as in catarrhal troubles. The disease advancing, cough or sore throat may be added, or the lungs become disordered, with other complications; dung clay-colored or black, passed in small balls covered with mucus, or it may pass in small quantities, frequently soft and slimy; horse usually stands stupid and resting his head on the manger, indicating headache; if he lies down, he stretches out, occasionally turning the mouth, with curled lip, toward the stomach, giving evidence of nausea; sometimes marked restlessness, pawing, and walking about; the point and sides of the tongue very red, the middle being a dirty white; mucus-glands on each side much enlarged; sometimes the lining of the cheeks and lips is of a saffron color, with scarlet blotches on the gums, and red streaks on the membrane of the nose, though without sore throat; in other cases, ulceration of the inside of the lips and the gums, with a craving for lime, the horse licking whitewash if it is in reach; teeth covered with yellow tartar, which disappears when the stomach-disorder passes off; the animal drinks water freely, *and will take gruel*; sometimes grinding of teeth; heart often affected, its beats being loud and irregular; in very bad cases, inflammation of the lymphatics on the legs and chest. In either form, inflammation of the stomach is characterized by much pain.

TREATMENT.—When the symptoms are loss of appetite and spirits, with rapid loss of strength, tongue red at its sides, with eruptions, mouth slimy, its lining membrane yellow, or with scarlet blotches, dung hard and slimy, or soft, passing frequently only a little at a time, covered with mucus, with or without indications of pain and restlessness, fever of a weak type, the pulse being quick and small, no abnormal sound in the thorax, give *nux vomica*. In cases with greatly increased saliva, offensive breath, and ulceration or congestion of the gums, give *mercurius corrosivus*. If the fever become typhoid, breath, dung, and secretions offensive, pulse imperceptible, and legs dropsical, give *arsenicum* every two hours. Give only gruel and mucilaginous drinks for the diet and drink.

INFLAMMATION OF THE LIVER.

Inflammation of the liver, a disease that is not frequent in horses, results from excess of food, especially of that which is very stimulating; want of exercise; hot stables; exposure to sudden changes of temperature; or may result from other diseases, as influenza and inflammation of the lungs; a heavy fall on the side may cause it; as also miasmatic influences and ague. It is of two kinds, *acute* (which seldom occurs) and *chronic*.

Symptoms.—In the *chronic* form the symptoms are dullness; listlessness; fever; pulse hard, frequent, irregular both in number and character, occasionally slow, sometimes fuller than usual; breathing almost wholly in the abdomen; mucous membrane joining the eyelid to the ball tinged with yellow; appetite bad; coat staring; mouth foul; tongue furred and dirty; dung hard, lumpy, light-colored, sometimes white or clayey, offensive and coated with mucus; pain in right shoulder, with lameness in right leg; sometimes dropsy or diarrhœa; itchy skin; mucous membrane in general yellowish; breathing usually little affected, though fits of blowing occur, with hollow cough; glands about the throat sometimes enlarged; rapid decline of condition; occasionally dropsy of the belly; congestion may be present, gradually continuing, with no marked change in general health of the horse, until the liver bursts and causes death; inflammation may set in and cause swelling in the region of the liver, with quick, hard, and small pulse.

In *acute* inflammation the horse perhaps coughs occasionally; hangs the head; drooping eyes; loathing of food; internal pain, not severe; passages of dung small and dark; urine scanty; mouth hot; fever; later, mucous membrane of the eyes, nose, lips and mouth yellowish; urine yellow; pulse strong, quick and bounding; perhaps the horse staggers.

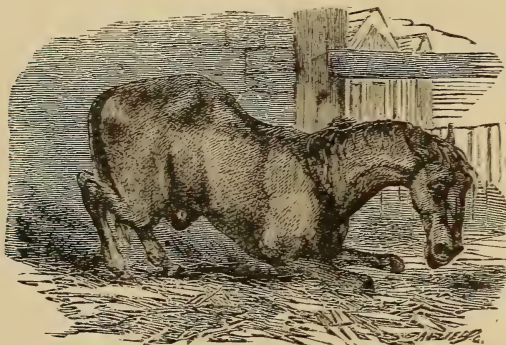
TREATMENT.—Give aconite for high fever; hot skin; thirst; furred tongue; restlessness; tenderness in the region of the liver, detected by the touch. In *acute* cases, give ten drops every one or two hours until the symptoms abate. If there be yellow coating of the tongue, yellowish membranes of the eyes, knotty and clayey dung, give mercurius, alone or in combination with podophyllin. *Nux vomica* is suitable for great tenderness in the region of the liver; thirst; costiveness; high-colored urine. This may be given in alternation with mercurius. If the disease progresses and is attended with offensive, blackish diarrhœa, weak, small and irregular pulse, cold extremities and great weakness, give arsenicum; this remedy is also efficacious when, in chronic inflammation of the liver, that organ has become enlarged, and the urine is scanty, and is adapted to dropsy of the belly, and to cases which arise from other disorders. The diet should in all cases be mild and not stimulating, such in general as is given for inflammation of the bowels. Tonics may be administered to sustain the strength, as taraxacum, cinchona and colombo, during the above treatment.

PERITONITIS.

This is an inflammation of the lining of the abdomen and of the membrane which covers the outside of the bowels. From inflammation of

the bowels it is distinguished by greater tenderness in the *back part* of the belly, and greater swelling; while it is unlike colic in that its pain is constant and is attended with acute fever. It is caused by wounds and injuries to the abdomen; exposure to cold; over-exertion, as in running and leaping; castration, a cold setting in afterward. It is very dangerous.

Symptoms.—Shivering, followed by fever and inactivity or uneasiness; loss of appetite; thirst; breathing short, and mainly confined to the chest; pulse hard, quick or wiry at first, becoming thready later; the disease growing worse, the horse paws and looks at his side; stands with legs under his



125. FREQUENT POSITION DURING PERITONITIS AND OTHER ABDOMINAL DISORDERS.

body, with haunches against something, or crouches; motion causes more pain; abdomen tender, and in first stages tucked up, but afterward grows swollen or contains wind; nostrils wide; anxious look; the animal does not lie down and arise often, as in colic; urine scanty and high-colored. In later stages pulse very weak; cold, clammy sweats; mouth and extremities cold; tremb-

ling of muscles; the horse stands moodily in one position, finally dropping and dying. Peritonitis may pass from the acute to the chronic form, and the latter may terminate in dropsy.

TREATMENT.—During the inflammatory stage give aconite if there is high fever; and if there is a bloody discharge from the bladder, alternate it with cantharis. If there be great swelling and tenderness of the belly, with pain and quick, short breath, give belladonna. If the disease progresses, and is marked by great loss of strength and a dropsical condition, arsenicum will be of value, and five-drop doses of Fowler's Solution will be a suitable form for its administration. In cases attended with great swelling of the sheath, scanty urine, painful and hurried breathing, bryonia will be of value. Rub dry mustard on the abdomen and apply large cloths wrung out in hot water to the belly, holding them in place with blankets and girths, changing them every hour in extreme cases. (See cut 123). All treatment should be applied at the earliest stage possible. During recovery be very careful about the diet, giving first linseed-tea and well boiled gruels of oat, barley or rye meal, following gradually with soft, warm mashies before the ordinary food is allowed.

PILES.

Piles are small tumors in the muscles forming the circumference of the anus, caused by swelling and enlargement of the veins, and are the result of constipation, unwise use of cathartics, heating food, insufficient work, and an obstruction of circulation which often arises from derangement of the liver.

Symptoms.—Small, soft tumors at the outer extremity of the rectum, sometimes bleeding in efforts to pass dung; straining; occasionally protrusion of the outer end of the rectum; sometimes constipation; symptoms of liver derangement; perhaps matter in the rectum.

TREATMENT.—The bowels should be kept free, though not loose, and if there is a relaxed, paralytic condition of the rectum, accompanied by obstinate constipation, nux vomica will be found valuable, a dose being given night and morning. If the bowel protrudes, give podophyllin in small doses. Should there be much bleeding or inflammation, apply extract of hamamelis and inject a solution of equal parts of the same and water into the bowel. If the bowel protrudes and is swollen and very much inflamed, apply hot fomentations, and carefully return it after oiling well. An excellent application will be found in the ointment here given:

Stramonium ointment,	3 ounces.
Pulverized nut-galls,	1 drachm.
Morphia sulphate,	10 grains.

Mix. Apply warm, passing some into the bowel.

CONCRETIONS.

These are balls, usually in the large intestine, composed wholly of imperfectly digested food mixed with mucous matter; or made by some hard substance which has been swallowed and acts as a nucleus in the stomach for the collection of undigested food. They vary much in size and obstruct the bowels.

Symptoms.—Usually no inconvenience is shown, the balls passing out when small; when they become large, great constipation.

TREATMENT.—If the presence of the balls is certainly known when they are small, a purge will remove them. Usually, however, this is not known until the balls have become so large as to stop the bowels. In this case treatment is of little avail, and the use of purgatives is very dangerous. Injections of soap and warm water may assist in the removal, as will also drenches of olive or linseed oil. To allay the pain, treat as directed for the spasmodic form of Colic, page 565.

RUPTURE.

This is a protrusion of a portion of some part of the intestine, or of the membrane attached to the stomach and lying next to the front part of the intestines, through a natural or artificial opening into some cavity. It is caused by drawing heavy loads, kicking, rearing, running, straining induced by colic, injuries resulting from a blow or kick, or hereditary tendency.

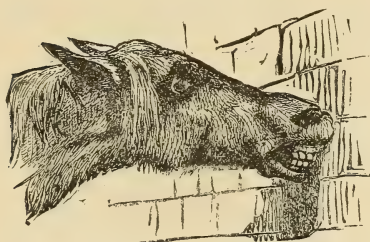
SYMPTOMS AND TREATMENT.—When a soft tumor is found at the navel, consisting of a sac that is elastic or inelastic, according as it contains respectively intestine or the membrane mentioned above, bad effects seldom result, the horse recovering as he grows older. Should this increase in size, and be attended with colic, a surgical operation is required at the hands of a skillful practitioner. If there be a fluctuating tumor or sac in the belly, containing a portion of intestine, which can generally be pushed back into the abdomen, a cure may often be effected by so pushing back the intestine and applying a bandage carefully and securely, *if this be done at first*. Since this kind of rupture seldom does harm, excepting as it disfigures the horse, it is usually best to omit an operation. Sometimes, when the treatment just named will not effect a cure, the intestine may be pushed up, and a strong band put around the neck of the sac which contained it, and left thus until it drops off, which will be in three or four weeks; or the band may be replaced with another after the first week. In either case, wooden clamps must be tightly placed over the skin forming the sac. If it be found that the aperture through which the protrusion has taken place has contracted so that the intestine cannot be pushed back, a skillful practitioner may perform an operation.

When the rupture is in the groin, the symptoms will be alternate ascent and descent of the testicle on the side affected, with a final ascent; cold sweats; constant colic, the horse often looking at the flank; perhaps attempts to vomit. In this case, the hand may be passed up the rectum and the intestine liberated from its confinement, though this is better done by a surgeon. When the intestine descends into the sac containing the testicles, it will disappear during rest, but reappear with exercise. Then the tumor grows larger gradually, and the aperture closes in, preventing the ascent of the intestine; there are dullness and indisposition to move; loathing of food; colic; constipation; rumbling of wind; in extreme cases, gangrene; cold sweats; shivering, and death. This form of rupture may not injure a horse's usefulness, and should be treated only by successful practitioners, if at all.

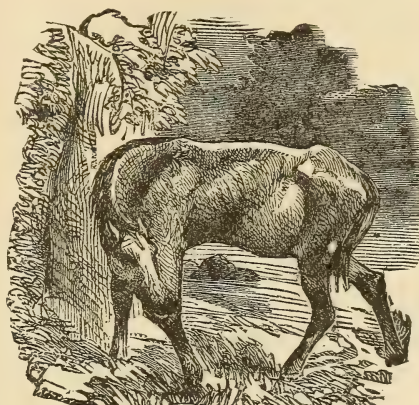
Owing to the liability to "constriction" and consequent inflammation and even gangrene, attention should be given to any case of rupture as soon as it is known to exist or is suspected.

INTESTINAL WORMS.

Several species of worms are found in the intestines of the horse, among which may be named (1) the long white worm, from six to twelve inches long, resembling the common earth-worm; (2) the slender one, from two to four inches long; (3) the small, active, needle-like worm, found in great numbers in the large intestines and rectum, causing great irritation, and being darker than those named above; (4) the tape-worm, white and jointed into regular sections; (5) the long threadworm. Two views are held regarding the cause of worms. One is that they are injurious in themselves and wholly foreign to the animal's constitution. The other is that they are due to a derangement of the mucous membrane and its secretions, favorable to the growth of their



126. RUBBING THE NOSE DURING THE PRESENCE OF WORMS.



127. PICKING THE HAIR WHEN WORMS ARE PRESENT.

germs. In support of the latter view it has been remarked that worms are seldom found in healthy horses, or at least not in large numbers, while in horses delicate or poorly fed they exist in great numbers.

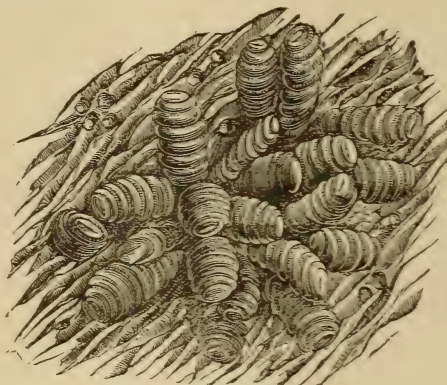
Symptoms.—Appetite at one time poor or wholly lost; at another voracious; low spirits; coat loses its gloss; the horse is hide-bound, licks the wall and eats dirt; dry, yellow or white matter about the anus, with itching, causing the animal to rub his tail or switch it about; dung often covered with mucus; worms in the dung are the unmistakable symptom.

TREATMENT.—Give salt in the food, and liquor arsenicalis, thirty drops three times a day. Or give one-fifth of a grain of arsenic night and morning in a little bran-mash; if it fails to effect a cure after two or three weeks, give five grains of sulphate of iron night and morning. In place of either of these courses, it may be well to give two powdered Croton beans in a handful of bran-mash, and a half-pint of linseed oil every morning. This has often been effectual. The Croton beans are also highly recommended

for expelling the worms, previous to the administration of the arsenic or sulphate of iron. For tape-worm, if its presence is known, *felix mas* has been deemed the best remedy, a half ounce of the decoction of the male fern being given early in the morning and late at night.

BOTS.

These are often found in large numbers in the horse's stomach, to the coat of which they attach themselves firmly by two strong hooks. They appear to feed on the mucus of the stomach. A gadfly deposits eggs on some part of the body, which after a while produce itching, when the horse gnaws at them and so swallows them; or they may fall from the hair of the throat and breast into the feed. At this stage the larvæ are very small, but in the stomach grow to the size of a small grub, when they let go, and, passing away in the dung, turn to a chrysalis, and finally to the gadfly. It is a disputed question whether bots do injury to the horse when they remain upon the coat of the stomach, some even claiming that they are in these cases a benefit. If however they pass into the intestines and attack the sensitive tissues, their ravages are very alarming, producing colicky pains and other evidences of intestinal disorder. They may certainly be nearly if not quite harmless in a horse in ordinary health.



128. BOTS IN THE STOMACH.

Symptoms.—The symptoms which call for treatment are agony of the horse, with inclinations to violent colicky attacks; general symptoms of indigestion or colic.

TREATMENT.—Give *nux vomica* for the colicky pains and ensuing indigestion. The appearance of the bots in the dung, though an unmistakable evidence of their presence in the horse, does not call for treatment; indeed, this is the best evidence that none is needed and that they are passing off in a natural way. When there is great agony, with colic-attacks, pour down the horse's throat a half-gallon or more of warm milk, or, still better, fresh warm blood. This is rich food and the bots leave the tissues to feed upon it. As soon as the agony is relieved, give a pint or even a quart of linseed or olive oil, which will bring away the liquid and the bots. It is useless to

try to kill the matured bots in the stomach, as they will resist the most "heroic" remedies. Means of prevention are the shaving off of the long hairs on the fore legs, throat, breast, or other parts where the eggs are deposited so as to find their way to the mouth. Such parts may also be oiled. The proper use of cloths and branches fastened on these parts will prevent the depositing of the eggs. If any eggs are seen on the animal, they can be washed or rubbed off, thus keeping them out of the mouth.

LOSS OF APPETITE.

Loss of appetite often results from long-continued feeding on hay and oats, without change; from too much feeding; from insufficient or irregular work; from bad food and bad water; from a dirty stall; or it may be a symptom of some disease whose cure is the remedy for the lost appetite.

Symptoms.—Nothing may be observable but an indisposition to eat for a long time, the horse tossing his food around; the mouth may be hot, tongue red, breath dry and offensive; sticky mucus in the mouth.

TREATMENT.—*Nux vomica* four times daily is usually sufficient. If the mouth, tongue and breath be affected, use *mercurius*. For disordered stomach, marked by hot mouth, red tongue and offensive breath, together with lost appetite and diarrhœa, give *arsenicum*. A simple change of the food to mashes and roots will often restore the tone of the stomach and improve the appetite. When this fails and there is no such impediment to eating as too long teeth or sore tongue, particularly if the horse is listless and the coat staring, one of the condition powders mentioned in the *Materia Medica* may be used. Give moderate exercise in the open air.

INDIGESTION.—DYSPEPSIA.

Acute dyspepsia or indigestion is caused by excessive feeding; rich food; hasty eating; copious drinks after meals; hot food; irritating plants. The chronic form results from insufficient or irregular work; badly-cured forage; a long continuance of the same kind of food without change; irregularity in times and quantity of feeding; rapid eating just before work; imperfect mastication; badly-ventilated stables; improper treatment of some disease, as by too large doses of calomel or tartar emetic.

Symptoms.—Tongue foul and coated; mouth slimy; changeable or corrupted appetite; unhealthy coat; sometimes ravenous eating, dirty litter and even dung being consumed; perhaps licking the whitewash on walls and manger, ending often in wind-sucking or crib-biting; or the appetite may be wholly lost; rapid loss of flesh; abdomen full or tucked up; weak-

ness; easy sweats; dung black and hard, or offensive and soft; urine thick, white, or high-colored; most of the grain is passed whole; frequently a short, hacking and irritating cough.

When there is a capricious or vile appetite, with hard, dry cough, there is derangement of the nerves of the lungs and stomach (pneumogastric nerve). The capricious or ravenous appetite, with the dung passed in hard, small, black or clay-colored balls, being slimy and offensive, the mucous membranes being of a yellow tinge, indicates gastric derangement; in which case slight pains in the abdomen are felt, skin variable in temperature, extremities cold and hot alternately, urine generally scanty and high-colored, though it may be paler than usual. If the horse becomes "pot-bellied" or dropsical, or loses flesh rapidly, or has dropsical swellings on different parts, the bowels being alternately loose and constipated, the symptoms show derangement and enlargement of the glands in the folds of the intestines. Imperfect mastication is followed by hay rejected from the mouth partially chewed, grain passing whole, the animal being in a low condition and hide-bound, and these symptoms demand an examination of the teeth with a balling-iron.

TREATMENT.—*Nux vomica* is especially demanded by capricious or depraved appetite, and is preferable to mercurial preparations when this appetite results from disease of the liver. *Nux vomica* is also needed when food passes undigested, or when the dung is hard, lumpy, or glazed with mucus; tongue slimy and furred; three to five drops of the tincture three or four times a day being suitable doses. *Arsenicum* is required in cases of long standing, with much weakness and loss of flesh, little appetite, frequent coughing after eating and drinking, dung soft, purging during work, skin scurfy and hide-bound. This drug in the form of iodide of arsenic is particularly valuable in cases induced by enlargement of the intestinal glands, with dropsical swellings of the chest, belly or legs. *Antimonium crudum* is superior for windy stomach, with pains, rough coat, thirst, and offensive dung, or when dreggy lumps are passed, and also for aversion to food. *Ipecac* is useful for nearly all forms of indigestion. *Phosphorus* or phosphoric acid is very useful for narrow-chested horses with consumptive tendency, and what is improperly called a "stomach cough" (really caused by irritation of the pneumogastric nerve), as it removes the cough and checks the diarrhœa. A few doses of *cinchona*, followed by one or two of *nux vomica*, are desirable for horses weakened by shedding the coat, which has induced indigestion and capricious appetite. *Mercurius* is desirable when both liver and stomach are deranged, the skin and eyes being yellowish. In chronic cases of indigestion marked by the general symptoms which indicate *nux vomica*, a dose of sulphur may be profitably given

every morning, with *nux vomica* at night. For liquid and offensive dung and total loss of appetite, give *pulsatilla*. Ten to twenty grains of bismuth or sulphate of soda night and morning will be serviceable.

In the way of general care, ascertain the cause of indigestion and remove it if possible. For example, if the teeth are uneven or long, rasp them; if the food be bad, change it; give a variety of green food if dry grain has been fed; give oats only when crushed; feed often, but little at a time. When exercise has been long neglected, give regular and moderate walking, avoiding quick work soon after feeding, and hard work altogether for a time. If the animal bolts the food at the beginning of the meal, give him a little hay to partially appease hunger, then follow with the oats, meal, bran, or whatever is to be given. Proper food and exercise are the essentials.

CRIB-BITING AND WIND-SUCKING.

These are caused by a disordered stomach, or they may be acquired by imitation; hence animals given to the practices should be separated from others, lest they afford a pernicious example. They reduce the condition of the horse and induce colic. After long indulgence the gullet is irregular in width, the abdomen swells, and wind in the stomach ensues.

Symptoms.—Front teeth worn unnaturally by rubbing or pressing the edge of the teeth on a hard substance, as the manger; the teeth are fastened into the manger; the neck is curved, and air is sucked in and swallowed with a peculiar noise; such is called a crib-biter. The wind-sucker presses the lips, instead of the teeth, against the manger; the neck is curved; the feet brought together, and wind sucked in and swallowed.

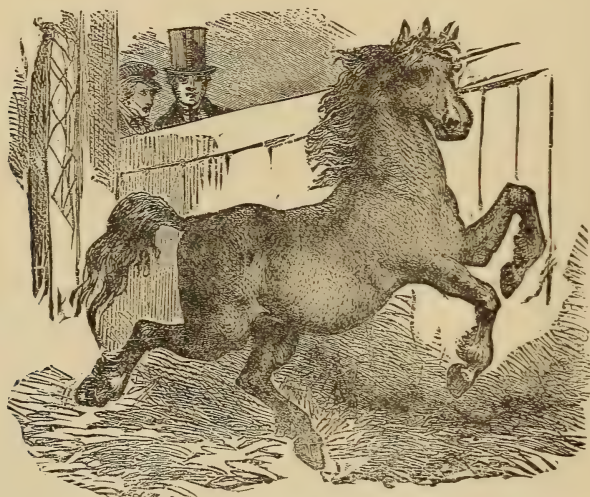
TREATMENT.—Straps, racks and muzzles are of little use; straps are liable to induce disorders of the air-passages which will end in roaring. Nails and sheet-iron put on the manger are apt to fail of their purpose, and will break the teeth. Aloes and coal-oil put on the manger have done some good. An effectual remedy is to remove the manger and whatever else the horse can fix his teeth or lips upon, and to feed him upon the ground. The simplest and most effective plan, however, is to put in a *smooth, hard roller* for the edge of the manger, which will revolve easily from any attempt to fasten upon it with the teeth or lips, thus preventing the practice. Some form of muzzle may be put on that will make the act impossible.

STOMACH STAGGERS.

This disease is usually caused by overloading the stomach, especially after a considerable fast, and by quick feeding; dry hay or barley, mingled

in the stomach with water; or excessive eating at a crib may be the cause. Any of these produce a swelling of the stomach, and lead to the disorder.

Symptoms.—The horse stands listless, drooping, drowsy, unsteady, or staring vacantly and unwilling to move; presses hard against the wall or rests the chin on the manger; occasionally falls asleep with partially masticated food in the mouth; pulse full and slow; yellow mucous membranes; bowels constipated; urine stops; breathing deep and snoring; if the disease increases, there ensues partial paralysis of the hind extremities; wild and staring eyes, or dilated pupil and insensibility to light; the animal walks around the stable, striking his head upon different objects; some tremors and sweats, with pain in the abdomen, or delirium; he stamps and looks at his sides; lies flat down, or sits on his haunches, not rolling or throwing himself as in colic; or brain-symptoms may predominate, the pulse being full,



129. VIOLENCE SOMETIMES EVINCED IN STOMACH STAGGERS, BUT MORE COMMON IN MAD STAGGERS.

bounding and quickened; the horse raises the fore feet into the manger, falls back, blowing or snorting, and lies exhausted; rises, grows sleepy, the enlarged pupils of the eyes and wild expression giving place to drooping lids and hanging tongue and head, with staggering; then the furious manner recurs and, being repeated, is followed by death from ruptured stomach. These symptoms should be carefully observed, as some of them are attendant upon apoplexy and brain fever. One of these is indicated if the horse has not eaten heartily after a fast, has not been at the crib, or on rich pasture in a hot sun when he is in bad condition, has not had grain whole and

unsoaked, has not been previously attacked, or if the disease is not prevalent in the neighborhood. An explicit showing of the difference between Stomach Staggers and Brain Fever (Mad Staggers) is given under the latter disease. Read also what is said upon Apoplexy.

TREATMENT.—Give a drench of five drachms of horse-aloes and two drachms of carbonate of soda, dissolved in a pint of boiling water, to empty the stomach. Then treat the paralysis and brain-disorder with nux vomica and belladonna. When no delirium exists, nux vomica will suffice, given every two hours, beginning two hours after the drench of aloes. For symptoms of delirium, give belladonna every two hours in alternation with nux vomica. Should the cleansing of the stomach commence, alternate these remedies every two hours. Give all the water the horse wants, but withhold all food the first twenty-four hours, thereafter giving bran-mashes or thick gruel. Apply cold cloths to the head during treatment.

PAIN IN THE STOMACH.

This is indicated by symptoms similar to those of colic (which see), but the horse in stomach-pain puts his nose behind the left elbow-joint, the seat of the stomach; gas rises from the stomach, producing waves along the gullet like those caused by the passage of food or drink, though in the opposite direction.

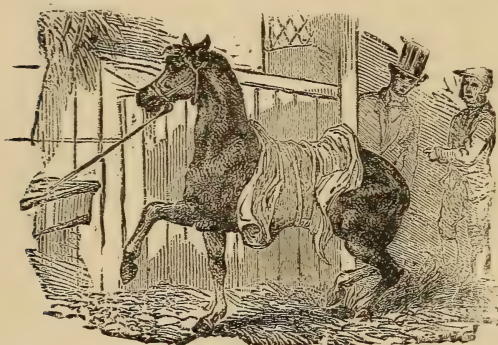
TREATMENT.—Give ten drops of antimonium crudum in a little flour every half-hour or hour until relief is given. A mild laxative may be given in the form of linseed oil or aloes. To quiet the pain, chloral hydrate or a hyperdermic injection of morphia may be used. Copious injections of hot water into the bowel will aid in giving relief.

CHOKING.

Bolting oats, swallowing potatoes, apples, carrots, medicinal balls, or even a whole egg, will cause choking; it may also result from stricture of the gullet, which is mentioned below.

Symptoms.—Refusal of food; slobbering; water flows from the mouth in an attempt to drink; frequent efforts at swallowing, with spasmodic contraction of the muscles of the neck; occasionally a sharp noise indicating pain. When the difficulty is in the throat, slobbering, cough, quick breath, sweats and frequent retchings occur. When it is further down in the gullet, a swelling arises in the left side of the neck; when still lower down, violent retching after swallowing a fluid, with less violent choking.

TREATMENT.—Linseed oil forced into or through the throat will usually remove the difficulty. If the choking is in the throat, open the mouth, draw the tongue far out and put the hand into the throat and remove the obstruction, the throat being rubbed or pressed at the same time to loosen it. If it is in the neck, rub and press the swollen part, and drench with

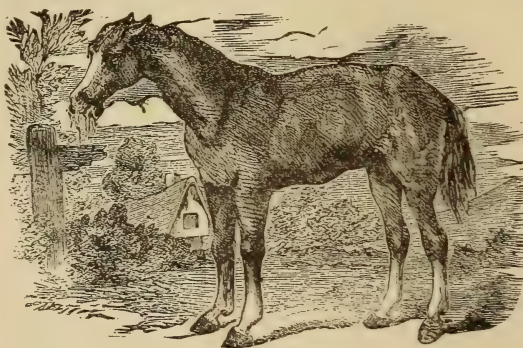


130. HIGH CHOKE—IN UPPER PART OF GULLET.

tepid water until the horse swallows the substance, or throws it up in retching. In the failure of these expedients, or when the offending object is out of reach by other means, such a probang as is mentioned under Stricture of the Gullet, or other like instrument, may be slowly and very gently pushed along the gutter of the roof of the mouth until the obstruction is reached,

and pressure be then gently applied to force it into the stomach. Such an operation is a delicate one, and should not be resorted to unless it is certainly known that the obstructing body has passed below the opening into the windpipe. The instrument is to be perfectly smooth and always well oiled before it is used.

When the choking persists, gag the animal by passing between the jaws a smooth roller of wood, drawing it well up between the teeth, and securing it thus by cords attached to the projecting ends and reaching up over the head. This prevents swelling of the abdomen, and the obstruction will probably soon pass down into the stomach. When using the probang, if the clogging is stubborn, it is well to stop the pressure, gag the animal as here directed, and then apply



131. LOW CHOKE—IN LOWER PART OF GULLET.

the probang again after a brief interval. If meal, bran and other fine food, or even oats, be fed, they will only become packed closely in the gullet, or œsophagus, after remaining a short time, and make the case worse. It is

always best in this kind of choking to pour down well-cooked gruel or water to break up the mass and carry it into the stomach a little at a time. The last resort is the opening of the gullet by a surgeon. After the removal of the object, and the stitching of the wound, no solid food should be given for some time.

INFLAMMATION OF THE MOUTH AND TONGUE.

This is caused by bruises from severe bits; biting of the tongue; licking irritating substances; improper administration of medicines, such as turpentine and ammonia; injuries from giving balls; teething; irregular or decayed teeth.

Symptoms.—Mouth red, painful and swollen; much fever; free discharge of mucus; peeling off of the mucous membrane of the mouth, followed by new sores, ulceration, and perhaps gangrene; the tongue sometimes hangs out, possibly with formation of matter, or it may remain stiff, hard and enlarged; difficult swallowing; obstructed respiration, with threatened choking; perhaps suppuration.

Treatment.—Should any feverish symptoms be present, give aconite every four hours. When local inflammation alone exists, give belladonna. When, after the inflammation has remained some time, the tongue is swollen and hard, and salivation continues, administer mercurius corrosivus. When the inflammation has been caused by injuries, arnica may be given internally, and a lotion of the same may also be applied to the wound. Arsenicum is valuable when gangrene is threatened or the discharge is offensive. In cases threatened with gangrene, or attended with an offensive discharge from the mouth, a wash should be used composed of two dessert-spoonfuls of Condyl's Fluid and a half-pint of water. When this difficulty is a simple inflammation from deranged digestion or other causes, wash the mouth frequently with cool astringent agencies, as vinegar and water, alum, tannin, tincture of myrrh, or a very weak solution of carbolic acid, ten drops to a pint of water. Sometimes the tongue becomes so much swollen as to threaten suffocation, and matter also forms in it. In these cases a cutting or scarifying of the tongue becomes necessary, followed by washing the mouth four or five times a day with a lotion composed of one ounce of calendula and twelve ounces of water. As food, give oatmeal-gruel or linseed-tea, by drenches if necessary. Give all the cold water the animal wants. Should ulcerations "gather" or point, lance them. On examination of the list of causes one will readily infer that irritating drugs are to be given with care, the teeth to be watched, and the food carefully regulated.

APHTHA OR THRUSH IN THE MOUTH.

This is less frequent in the horse than in other animals. It is an inflammation of the tongue or mucous membrane of the mouth, consisting of a pimply eruption which terminates in white scabs or dead skin. Though usually constitutional, it may result from a chemical process, or from a mechanical one, such as pressure.

Symptoms.—Clusters of white vesicles on the tongue, especially the sides and tip, and on the inside of the cheeks and lips; increased flow of saliva; difficult feeding; vesicles burst; small ulcers take place; the scaly covering of the tongue peels off, leaving a raw surface, which prevents eating; sometimes strangles occur with this disease.



132. APHTHOUS MOUTH.

TREATMENT.—Give mercurius three times a day, dry on the tongue. Should the mercurius not remove the disorder in two days, or if unmistakable signs of derangement of the stomach be present, give nuxvomica three or four times a day. Arsenicum and sulphur are useful for ulcerations of the lips and nose. As a local remedy, one dessert-spoonful of Condyl's Fluid in eight ounces of water will cleanse the mouth. A solution of bi-sulphite of soda, or of borax, will also be a good wash.

CARIES OR ULCERATION OF THE JAW.

The use of the high bit and tight nose-band causes laceration of the palate, followed by unhealthy sores which extend to the bone and end in ulceration. Between the tushes and molars of the lower jaw a like injury may also be produced by a long check-bit and tight curb.

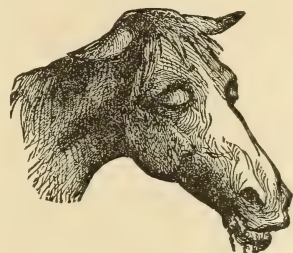
Symptoms.—Slobbering, often offensive and bloody; inability to eat hard food, which is thrown from the mouth during mastication; ragged wound in the mouth, with granulations at the bottom or on the sides; the probe easily finds the bone; sometimes mortification.

TREATMENT.—For a sloughing wound, with dingy-colored base and unhealthy granulations, touch the bottom of the wound and the granulations once a day with some mild caustic, as nitrate of silver, until the wound becomes of a healthy appearance, when treatment should cease. Give green food, if possible, not using a bit until the wound is healed. The reckless use of severe curbs and check-bits deserves the highest censure. The substitution of more grateful ones, and the proper change in the nose-band will prevent many cases.

CARIES OR ULCERATION OF THE TEETH.

This is a result of some disease of the teeth, and produces a half-bone, half-cartilage growth on the cellular structure of the jaw, which can be remedied only by cutting it off. It is generally a corruption of the dentine and enamel and may originate at the fang, when the inside pulp is destroyed, and hence the tooth dies. If it attacks the last three upper molars, it extends to the maxillary cavities and nasal chambers, producing a discharge similar to that in glanders. Should an abscess break on the surface, fistula of the face occurs, and should be treated as directed under the section on that disease. Ulceration of the teeth may result from strangles and catarrh when the nasal discharge has been free for a long time. Hot food or large doses of mercury may cause it. Usually, however, there is an unknown cause acting through the nerves and blood-vessels of the center of the tooth.

Symptoms.—If the tooth aches, the horse rests one side of the head on the manger and refuses food; swollen cheek and increased flow of saliva. In other cases, the horse “quids” hay or corn, and drops it, or bolts corn, so that it is whole in the dung; offensive breath; if the maxillary cavities are diseased, a discharge of pus and mucus flow from the nostril on the side affected—from both if both sides are diseased; the glands under the jaw are swollen as in glanders; eye sometimes irritated; the horse loses flesh and becomes hide-bound; the balling-iron shows a black spot or cavity in the tooth, with collections of decomposed and very offensive food; gums sometimes inflamed and swollen.



133. SIGN OF CARIES AND TOOTH-ACHE.

TREATMENT.—This consists mainly in the removal of the diseased tooth by a skillful operator. If the jaw be diseased, it should be cleansed daily with carbolated water. Apply tincture of myrrh to the gums.

IRREGULAR GROWTH OF THE TEETH.

The grinding surface sometimes becomes sharp and uneven, causing serious injury to the tongue, cheek or palate, and occasionally a disorder in the upper jaw, with symptoms similar to those in ulceration of the teeth. One of the most common forms is the projection of one of the incisors outward (“buck-tooth”); while an extra tooth appears sometimes in front of the molars (“wolf-tooth”).

TREATMENT.—Rasp the teeth or cut off the projecting parts. Some-

times remove the irregular tooth. These steps should be taken by a skillful operator with special instruments, never be knocked out with a punch.

LAMPAS.

Lampas is a disorder occurring especially among young horses, and consisting in inflammation and swelling of the front part of the palate, causing it to descend as low as the front teeth, or below them. It results from teething or derangement of the stomach, usually preventing the horse from eating.

TREATMENT.—No treatment, as a rule, is necessary except that the horse be given bran and other soft food for a few days, and the mouth be occasionally washed with a solution made of a teaspoonful of alum and a half-pint of water. For derangement of the stomach, *nux vomica* is often useful. *Mercurius* is also beneficial. Scarifying is unnecessary, but it is best to apply some soothing wash, as one of tincture of myrrh. Give linseed-tea, gruel and bran-mashes, but no hay, until recovery ensues.

SALIVATION.—“SLOBBERS.”

Salivation, or undue flow of saliva, is caused by eating certain kinds of green food; administering mercury, whether by the nose or mouth, or by friction on the skin; inflammation of the mouth and salivary glands. It has sometimes occurred when it could be attributed only to some derangement of the nerves supplying the salivary gland. It is indicated by an unusual flow of saliva, with or without offensive breath, and with or without sore mouth. When the administration of mercury is the cause, the teeth may be loose, the gums ulcerate, and general disorder of the stomach and bowels set in.

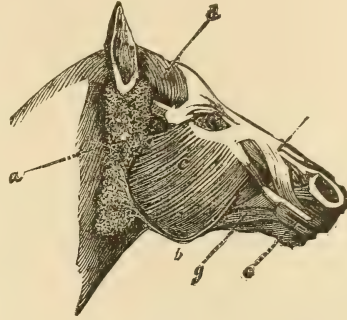
TREATMENT.—When the cause is green food, change the feed and give a few drops of nitric acid or *mercurius* night and morning; if caused by mercury, give nitric acid, iodine, and iodide or chlorate of potassium. When traceable to nervous derangement, and not to mercury, give *arsenicum* every four or five hours. In persistent cases, try chlorate or iodide potassa, rubbing iodine ointment over the glands, under the ears and between the jaws. A wash of *hydrastia* and water (one part of fluid *hydrastia* to ten of water), or an infusion of butternut-bark will restore the integrity of the gums and lessen the flow of saliva. “Slobbers” which arises from feeding on low clover pasturage is often very disagreeable to the rider or driver, and he may give temporary relief by feeding a pint of dry bran, but a cure comes only by a change of pasture.

SALIVARY CALCULI.

These are masses usually composed of phosphate and carbonate of lime mingled with animal matter, which form in the glands that pass over the margin of the jaw below the ear, or in the glands beneath these, or in those which are under the tongue. A grain of oats, barley or wheat may have lodged in the duct, and have formed the nucleus of a calculus.

Symptoms.—Enlargement of the ducts which lead from the glands, due to accumulations of saliva which the obstruction prevents from passing out; matter may form and burst out; chewing and swallowing are more or less impeded.

TREATMENT.—A skillful operator may remove the calculus by surgical means, bring the lips of the cut together, and sew and plaster it evenly. If this be poorly done, salivary fistula (see below) will probably ensue. If the calculus forms at the mouth of the duct, the duct may be expanded and the obstruction be removed with forceps. In mild cases a cure may be effected by pushing the calculus into the mouth by manipulations along the outside, over the obstructed part of the duct.



134. SEAT OF SALIVARY CALCULUS AND FISTULA.

a, Salivary Gland. *b*, Duct, in which Calculi form. *c*, *d*, *e*, *f*, *g*, Muscles of Mastication.

SALIVARY FISTULA.

This is a tube-like sore which opens into the salivary gland at a point where the latter passes over the angle of the jaw. It is caused by some obstruction in the gland, or by a wound, and if neglected is difficult to cure.

Symptoms.—Discharge of clear, limpid saliva from the sore, especially when the animal is chewing; impairment of digestion and general health.

TREATMENT.—Keep the head elevated, tying the halter to both sides of the stall to prevent rubbing of the sore. Give gruel and soft food, putting the meals and drinks at long intervals, and allowing no oats, whole grain, or hay. Wash the wound frequently with a solution of one part of calendula to ten of water. If the fistula is of recent development, shave the edges of the sore, bring the lips evenly together, and apply enough layers of collodion to make a fastening sufficiently strong to prevent the bursting out of the secretions. Sometimes a blister over the opening is advisable. It may be necessary to close the opening with sutures of cat-

gut or other material. The natural opening of the gland into the mouth should be kept open, and thorough cleanliness of the mouth will assist in keeping it so. Mastication tends to retard the cure.

PROTRUSION OF THE TONGUE.

Hanging or protrusion of the tongue is an indication of paralysis, wounds or injuries to the tongue, or weakness and lengthening of the muscles which control it. Paralysis of the lips sometimes attends it, the lip then hanging down, with slobbering and difficulty in picking up food.

TREATMENT.—Many times a faulty bit is the cause, and a change in it will relieve the trouble. When paralysis is the occasion of the disorder, the best results will be obtained by giving strychnia, one-hundredth of a grain three times a day. Plumbum will help some cases. Electricity applied to the nerves may stimulate them to action and thus afford relief. A piece of the tongue is often cut off to prevent injury, but that is seldom necessary if the treatment here noted be observed with precision.

STRICTURE OR CONTRACTION OF THE GULLET.

This may be caused by the lodging of some food in the neck, or may occur near the stomach when only the introduction of a suitable instrument into the gullet, through the mouth, can afford relief. It is caused by a mechanical or chemical injury, by thickening of an inflamed mucous membrane, and by cancer.

Symptoms.—Difficulty in swallowing, with expulsion of food from the nostrils; quidding of hay and throwing it from the mouth; sharp appetite, with inability to gratify it; loss of spirits and condition.

TREATMENT.—Prepare three probangs, long, smooth and slender, of different sizes, made of gutta-percha, with an ivory knob on the end to prevent injury to the membrane. Oil these well and use them every day, applying the first (about the size of the little finger) until it passes down freely; then the second (slightly larger), until its passage is easy, when the third size may be used. It is a delicate operation and can safely be performed only with the closest care. Give soft, nutritious food, but no dry hay or grain.



CHAPTER IV.

THE ORGANS OF CIRCULATION.

PALPITATION.—THUMPS.

THIS is an unhealthy increase in the heart's action, found in horses that are feeble, or that are subjected to severe or straining exercise, as running or drawing heavy loads up hill. We recognize two forms and give them separate treatment.

The First Form.—Poor blood is the cause of this form. Its symptoms are a dull, thumping sound in the breast, being heard at a distance of several yards in extreme cases, corresponding to the pulse and heart-beats; troubled breathing; increased temperature of the body; red mucous membranes; the ear placed to the heart detects "blood-sounds" about the heart, veins and arteries, made by the blood passing through the channels of the heart, and making a continuous hum; sometimes shaking or jerking of the whole body.

TREATMENT OF THE FIRST FORM.—Give stimulants and tonics with mild exercise. Aconite should be given every half-hour when the cause is violent exercise, and the breathing is rapid. It may be beneficially alternated with nux vomica. Arsenicum is desirable when the disorder attacks horses that are in fair condition, and when it manifests itself especially at night. The tincture of Peruvian bark will relieve the constitutional weakness, a teaspoonful or less being given three or four times a day. Nux vomica is recommended for palpitation induced by indigestion. Asafoetida is useful for the form which results from excessive physical motion, with an intermittent pulse. Digitalis should be given if there be oppressed breathing and great distress, half a teaspoonful of tincture at a dose. Give belladonna for palpitation during rest and increasing with motion; intermitting pulse; and for trembling heart, with great distress. For horses with palpitation which have been subject to rheumatism, spigelia is one of the most valuable medicines, twenty drops being given three times a day. Give moderate, nourishing diet; perfect rest for a few days after an attack, and only light work thereafter for several weeks; fresh air; freedom from draughts.

The Second Form.—This is often improperly called spasm of the diaphragm, which is really hiccough and is elsewhere considered. The second form of palpitation, also called “thumps,” is caused by excessive action of the heart incident to a hard or exciting run, which causes a jerking of the whole body as the heart strikes the region toward the upper part of the false ribs. The symptoms of the first form of palpitation, as noted above, attend this, together with a violent raising of the flanks which proves unpleasant to a rider. The symptoms come and go suddenly. As an aid in distinguishing this form of palpitation from true spasm of the diaphragm, or hiccough, the reader is referred to the subjoined parallel tables of symptoms.

PALPITATION OR THUMPS.

Hiccough is seldom present.

The action of the abdominal muscles is increased, and the heaving of the flanks is quite visible.

The flanks are tucked-up.

SPASM OF THE DIAPHRAGM.

Hiccough is always present.

The action of the abdominal muscles at the flank is imperceptible.

There is great fullness in the flanks from the abdominal viscera being pushed backward.

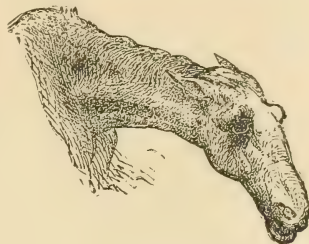
TREATMENT.—Digitalis is valuable for great irregularity of the heart's action, inability to lie down or walk, and much distress, a half-teaspoonful to a teaspoonful two or three times a day being suitable as the dose. Stannum has alone cured this form of palpitation. Observe the same general care as was outlined above for the first form.

DROPSY OF THE HEART.

This is the result of an inflammation of the serous membrane which envelops the heart as a sac, causing serous fluid to be deposited within this membrane in unnaturally large quantities. It may result from exposure to cold, damp, changes of temperature; from those conditions which produce acute diseases of the breathing organs; from changes to a hot stable from the field; from a sudden transition from poor to rich and heating food. It however generally comes along with influenza, rheumatism or pleurisy.

Symptoms.—These are easily confounded with those of pleurisy. The horse stands still, with anxious face and lowered head, showing signs of great pain; fixed eyes; extended nostrils; pulse 100 to 120, wiry, perhaps irregular or intermittent; great fever; breathing 30 to 40 per minute, difficult, with complicated movement of flanks, much like that in broken wind; in early stages pressure in the region of the heart causes flinching and signs of pain; the ear placed in the same region perhaps detects friction-sounds,

before the serous matter has accumulated, not heard after that effusion; when these friction-sounds cease the heart-beats are muffled; later still, the effusion increasing, the impulse of the heart is not well defined, but is a flutter in uncertain beats, giving a peculiar pulsation to the hand; breathing grows more distressing; movement aggravates the pain; pulse feebler, being even imperceptible at the jaw; legs and ears cold; chest, abdomen, legs, and other parts dropsical; death soon ensues. In some of the more advanced stages, striking upon the parts near the heart produces a dull sound near that organ, but does not disturb the bronchial and respiratory sounds, which are affected in hydrothorax, or water in the chest. In pleurisy, the frictional sounds occur during the respiratory movements of the lungs; in dropsy of the heart, during the beats of the heart. The reader should be very careful to take note of these distinguishing symptoms.



135. GENERAL SYMPTOM OF HEART DISEASE.

TREATMENT.—During the inflammatory stage, when the sound of the heart is lessened, with strong, regular impulse, and hard, strong and quick pulse, give aconite every two hours; or alternate it with bryonia, especially in complications with rheumatism. For irregular or intermittent action of the heart, give ten to twenty drops of digitalis every four hours; and when the disorder follows or accompanies rheumatism (in which case the beats are usually jerking), alternate digitalis with colchicum. Give arsenicum or apis in the second stage, when the serous matter has distended the sac which envelops the heart, particularly if dropsical swellings exist in other parts. Acetate of potassa will induce free action of the kidneys and lessen the tendency to dropsy, and a teaspoonful may be given much diluted with water. In extreme cases, and when the collection of fluid is great, it may be drawn off with a trocar or an aspirating needle, as in hydrothorax or dropsy of the chest, the puncture being made by a skillful hand between the fifth and sixth ribs. Hot fomentations applied to the chest will tend to allay the inflammation. Mustard and flaxseed poultices will also be of service. Keep the surface of the body warm, and bandage and hand-rub the legs. Blood-letting is highly injurious in this disorder, as in most others.

ENDOCARDITIS.—INFLAMMATION OF THE HEART.

This is a very frequent complication of rheumatism, or may result from an undue strain in severe work, is dangerous, and may lead to many serious disorders of the heart.

Symptoms.—The heart contracts energetically with vibrations, and often irregularly; pulse irregular, frequently intermittent, and is *feeble*, in striking contrast with the violent beats of the heart; a bellows-sound or sawing noise. In early stages the breathing is not so difficult as in dropsy of the heart, but may grow very distressing if the valves of the heart become thickened; legs generally cold; the membrane is thickened, wholly or in part, sometimes resulting in a polypus of great size.

TREATMENT.—For the primary symptoms aconite is the best remedy, especially in rheumatic forms, and if given in time may effect a favorable termination in many cases. It is desirable for palpitation and irregular action of the heart and for difficult breathing. Give it every hour. Give arsenicum and digitalis in alternation, four or five doses of each in twenty-four hours, if the pulse becomes feeble and intermittent. Most cases have their origin in a rheumatic condition which calls for colchicum and iodide of potassa. After the inflammatory symptoms have subsided the following prescription will be found of value:

Wine of colchicum seeds.	1 ounce.
Iodide of potassa,	½ ounce.
Digitalis tincture,	1 ounce.
Water,	1 pint.

Mix. Give a half-wineglassful three or four times a day.

ENLARGEMENT OR HYPERTROPHY OF THE HEART.

This is a thickening of a part, less frequently the whole, of the walls of the heart. It is often found in broken-winded horses. Some of the causes are contraction of the vessels and the openings of the cavities of the heart, or deposits on the valves which lead to excessive action of the heart to overcome the obstructions, thus enlarging the muscles of the heart's walls; tumor in the aorta, or pulmonary artery; exhaustion from excessive exertion, especially from arduous labor with full stomachs. It also results from other diseases, especially affections of the lungs.

Symptoms.—The movement of the heart becomes and continues strong and impulsive, with an intense sound and loud, thumping, hollow beat; irregularity of heart-action; dull sound on striking a part near the heart; palpitation comes on from quick work, accompanied with an anxious look of the eye; cold ears and legs; dizziness; difficult breathing; languor; loss of appetite; in late stages, dropsical swellings on the chest, abdomen and legs.

TREATMENT.—This is incurable, but the life of the horse may be extended for years, even to old age. Yet this end can be attained only by

proper care. Medicines can be of little avail in correcting the essential nature of the ailment, but digitalis may be found serviceable in reducing irregular movements of the heart. Give simple but not stimulating food in small quantities, and impose only light and slow work, particularly in ascending a hill or any grade. Avoid excitement when possible.

DILATATION OF THE HEART.

Dilatation signifies an enlargement of one or more of the cavities of the heart. Its causes are a defect of the valves by which the blood is allowed to flow back and distend the walls; loss of nervous power; certain types of fever which weaken the muscular fibers.

Symptoms.—The heart's action is feeble and tremulous; pulse weak, soft and small; poor appetite; languor; dizziness; difficult breathing; ears and legs cold; finally dropsical swelling of the legs, belly and chest. It may exist with enlargement of the heart (see last disease), or with wasting of the heart (see the disease next considered).

TREATMENT.—This disorder can not be cured, but relief may be given by using arsenicum three times a day, and insuring an easy, quiet life.

WASTING OR ATROPHY OF THE HEART.

This is an emaciation of the walls of the heart from causes similar to those producing dilatation.

Symptoms.—Feeble impulse of the heart, an unusually loud sound being detected by applying the ear to the chest; pulse feeble, slow and intermittent; the veins of the neck pulsate; dullness; fastidious appetite; legs cold; dropsical swellings on the limbs, belly and chest; difficult breathing on the slightest exercise; sometimes palpitation or fluttering of the heart.

TREATMENT.—Arsenicum three times a day will afford a partial relief, though no known remedy is of permanent avail. Insure ease and quiet.

INFLAMMATION OF THE VEINS.

This is rare, excepting in case of some injury, as that caused by careless bleeding, especially with rusty instruments.

Symptoms.—The incision for bleeding or other purpose is surrounded by a swelling, small at first but increasing, hot and painful; the lips of the wound separate, the wound itself being red and moistened with a burning, very irritable, pussy substance; matter may form externally and the disorder soon pass away. Usually, however, the swelling increases; the vein

above the inflammation is hard, hot and cord-like; the salivary gland is much enlarged, most likely leading to the obliteration of the vein; if blood begins to flow from the vein, it will be difficult to stop it; the vein being lost, the circulation is disturbed, especially when the head is down, as in grazing; if ulceration be present, internal abscesses form with fatal results. Fever will exist in most cases.

TREATMENT.—Give aconite for general feverish condition; dry, hot skin; full pulse; local inflammation. Belladonna is demanded for redness of the mucous membranes, sunken eyes with enlarged pupils. Give hepar if there be a pussy discharge from the wound, swelling of the glands with threatened abscesses, and for early stages of the formation of pus. Hamamelis, used externally on the wound as well as taken internally, is very desirable, and may be applied externally when any other remedy is administered. Give the horse quietness and *rest*. Apply hot fomentations freely. Tie the horse so the head can not hang down. Remove all hair, dirt and pus that may form about the wound. Let the diet be composed mainly of bran-mashes, avoiding hay and other articles that require mastication.

SWOLLEN OR VARICOSE VEINS.

A morbid enlargement of a vein, with a knotty, unequal swelling, may render the valves useless, and thus retard the flow of blood back to the heart. It usually affects the vein that passes over the inner surface of the hock-joint, though it may form in other veins. It is caused by violent strains, in drawing and otherwise; inflammation from a prick in shoeing; often by frequent blood-letting.

Symptoms.—The affected veins are crooked, knotted, enlarged, and divided into separate pouches or sacs; if the disorder be at the hock-joint, there will be a tumor, increasing in size, soft, hanging slightly, and shaking when the horse walks, becoming full and tense by pressure on the vein above it, and giving out a discharge by pressure carried upward from below. The knotted or swollen condition of the affected vein will be worse during standing, working, and the like.

TREATMENT.—There is little chance of a permanent cure. A half-teaspoonful of hamamelis two or three times a day should be given, and applications of the same remedy be applied externally as often or oftener in the form of compresses secured by bandages. Rhus is an excellent remedy for both internal and external use. Have the animal lie down as much as practicable, standing being even more unfavorable than walking. Moderately tight bandages over the hock may be serviceable, and should be worn continuously until the vein has been obliterated.

ANEURISM.

This is a tumor formed by the swelling of an artery. At first it pulsates and contains fluid blood; later it is filled with coagulated blood. As it grows old, the artery may burst. The posterior aorta, at the beginning of the front mesenteric artery, is very subject to aneurism as the horse grows older.

Symptoms.—The symptoms are so obscure and so similar to those in other diseases that it is difficult to tell when they are a result of this disorder. They come suddenly; the horse is dejected, unable to work, and thin; breathing quickened; irregular pulse and heart-beats; tenderness at the loins; stiffness in turning; swelling and cramps in the legs; paralysis.

TREATMENT.—If the presence of an aneurism can be known, digitalis may be useful, but the only course of any promise is to promote the general health, lower the diet and work, and insure general quiet.

ENLARGEMENT OF AN ARTERY.

Enlargement and clogging of an artery, known as "embolism," result from coagulated lymph, clots of fiber, pieces of diseased tissue, the elements of cancer or tubercle which are brought to the artery from the circulation and prevent the flow of blood from the artery to the limbs. Enlargement may also result from inflammation set up by parasites in the blood or in wounds.

Symptoms.—These, as in aneurism, are obscure, and it is difficult to determine from them whether an embolism is present or not. They are, great pain; quick, wiry pulse; anxious look; free sweats; cold extremities; local tremors; stiffness and contraction of certain muscles; the horse looks around toward the affected part; temporary paralysis of the affected limb or some of its muscles, followed by partial recovery and a similar attack of the other limb; return of the attack to the limb first affected; diminished pulse of the arteries in the limb involved; peculiar throbbing, felt through the rectum, in the posterior aorta; partial or complete paralysis of the hind limbs, or the hind quarters entire; finally death.

TREATMENT.—Treatment avails nothing, except it be careful guarding of the general health; cures can be effected only by nature. Aconite is the sole remedy which is even likely to give relief. Give perfect rest and apply warm fomentations to the affected part, if it can be located. If the case is persistent, several months may elapse before even a limited cure will ensue, during which time the animal should be kept in a yard where he will get gentle exercise and be well fed, so as to restore normal circulation.

CHAPTER V.

THE RESPIRATORY ORGANS.

COUGH.

COUGH has so many forms, and is so frequent a symptom that a detailed study of it is very important, to determine its seat and cause. It is caused by inflammation of some part of the membrane lining the lungs and air-passages; teething; organic trouble in the viscera of the chest; nervous disorder; foreign substance in the breathing-apparatus, and the like. It may be *acute*, then being usually a symptom of catarrh, bronchitis, pneumonia, or other similar affection, and disappearing with the disease which causes it; or it may be *chronic*, as a result of some form of the acute, or as originally a simple cough, and is less easily cured than the acute. The following are the principal kinds of cough with their symptoms, condensed in the main from the "*Veterinary Vade Mecum*:"—

I. (a.) From *teething*: Loud, ringing and clear, mainly in the morning and at night, met with in horses four and five years of age, probably dependent upon nervous irritation from cutting of the tushes; mouth hot; bars of palate full, as in lampas; tenderness in eating grain; general health seemingly good, as well as the spirits. (b.) If the cough results from the *pharynx*, *fauces*, and glands near them, it is moist, heavy-sounding, long, and apparently hanging in the throat; at first it may be dry and short, but a change soon comes on from a return of the secretion in increased quantities. (c.) If the cough arises from the membrane lining the *larynx*, it is fitful, and may easily be produced by pressing on the top of the windpipe; when resulting from the laryngeal membrane, the cough is hard, and has a metallic, ringing sound, followed by a long, harsh catching of breath, producing a noise akin to that of a roarer when on the canter; when resulting from disorder of the recurrent nerve, it is dry, loud, and spasmodic, often chronic, becoming loose and less painful upon the return of the secretion. (d.) If the cough results from an increase in the secretion of the membrane lining the *windpipe*, it will be long and moist, though frequent, sometimes with a thick, white discharge from the nose or mouth. On the other hand,

if the membrane of the windpipe be dry, the cough will be dry, and the ear, applied to the windpipe, will detect a cooing, deep sound, instead of the moist, rattling sound mentioned under (c). (e.) *The bronchial cough* is at first short, dry, hard, and frequent, but grows moist, muffled, feeble and prolonged upon the return of secretion. Arising from dryness and inflammation of the large bronchial tubes, it produces a cooing sound, audible to the ear placed at the root of the windpipe in front of the chest. Should the small bronchial tubes be similarly affected, the ear put upon the sides of the chest will notice a shrill or dry hissing rattle. When the secretion returns, a fluid rattle is heard, with decreased or suppressed breathing murmur, until the cough removes the secretion. (f.) *Pulmonary cough*, resulting from inflammation in the substance of the lung, is short, dry, and frequent; accompanied by difficult breathing and increased by striking on the sides of the thorax. As the disease advances, this cough becomes more constrained and painful, or ceases altogether. (g.) *The asthmatic* or broken-wind cough is short, more like a grunt than a cough, and so feeble that it cannot be heard at any distance. It is frequently accompanied by a wheezing noise in the throat, and by jerking, irregular or double movement of the flanks in expelling the breath. (h.) *The consumptive cough* is short and feeble, and may be known by an absence of murmur in circumscribed spots of either lung, with increased bronchial respiration, cavernous or foamy rattles. (i.) *The pleuritic cough* is painful, and hangs in the chest from the endeavor of the animal to suppress it.

II. *Chronic cough* is that which continues months or years without vitally damaging the general health, and may result from previous disease, or may from the first be simple, resulting from nervous derangement. It is of three kinds, namely: The hollow, groaning cough; the loud, dry, spasmodic cough; the short, feeble, hacking, grunting cough. These are here described. (a.) The *hollow* cough apparently comes from the inmost parts of the body, follows a noise made up of a half-groan and half-cough, and comes on morning and night; it probably results from derangement of the nerve lining the stomach and lungs, though it often arises from a consolidation of a part of the lung, attended with bronchial respiration in the other parts. (b.) The *loud, dry, spasmodic* cough, increased by eating and drinking, seems to depend upon an irritability of the membrane lining the larynx in an animal just brought from the stable, or upon disorder of the recurrent nerve. (c.) The *short, hacking, grunting* cough is similar to that of a horse with broken-wind, the breathing however, being even; it usually depends upon loss of nervous power, though it may arise from some obstruction of the air-passages by a deposition of lymph. Such a cough is likewise heard in rupture of the diaphragm.

TREATMENT.—Aconite may be used for all coughs with inflammation, either of the mucous membrane lining the air-passages or of the substance of the lungs. In inflammation of the membrane of the air-passages the membrane is dry. When the lung-substance is affected, the pulse is strong and quickened, and the breathing murmur diminished, with a sawing kind of sound, called bronchial respiration. In such cases the cough is dry, short and frequent. As soon as secretion returns to the mucous membrane, or the pulse becomes small and feeble, aconite should be left off, or alternated with some remedy adapted to the nature and location of the disease on which the cough depends, and of which it is a symptom. Give belladonna when the cough is short, dry and barking; worse in the evening or night, seemingly caused by trouble in the throat; when there is sore throat with difficult swallowing, or chronic cough. Administer arsenicum for dry cough, in the evening or at night, after eating or drinking, or going up hill, or from contact with cold air; difficult breathing; thin discharge from the nostrils; for coughs following catarrh of a weak type and influenza. When the cough is dry, hoarse and spasmodic, worse in the morning, after exercise or after eating, and attended with disorder of the stomach, furred tongue, foul mouth, uncertain appetite, and constipation, give nux vomica. Phosphorus is needed for a dry cough excited by cold air, drinking, irritation and tickling in the windpipe, and attended with discharges of phlegm and difficult breathing. Give bryonia for a cough which requires much effort, and cuts short the breathing; cough during frosty weather, or east winds, or after eating and drinking; continued dry cough, especially in the morning, attended with rattling in some part of the windpipe, caused by tenacious mucus or soft lymph, and produced by pressure on the part of the windpipe where the rattling occurs. Iodine is indicated by cough situated in the larynx or windpipe, accompanied by soft secretions, or dependent on chronic inflammation of the mucous membrane, with foul discharge from the nostrils; the same remedy is useful for irritable but not inflamed salivary glands. Tartar emetic is serviceable for bronchial cough, when it is loose and attended with an abundant discharge of mucus, loud rattling, and painful breathing. Give cannabis for frequent attacks of fitful, hollow-sounding cough, occurring only in the morning, or for coughs in the evening, and not extending through the night. Kali bichromicum is effectual for tough, ropy, sticky phlegm of long-standing cases, and when the tongue is covered with fur. Spongia is demanded for shrill, sharp, ringing cough; inflamed windpipe; or dry, hollow, barking cough; loose cough; suffocating cough; violent racking cough; rattling in the bronchial tubes. For coughs of the various respiratory difficulties refer to those ailments.

COLD.—CATARRH.—CORYZA.

By these terms is meant an inflammation of the mucous membrane of the nose, throat and air-passages, with fever. Though often of little moment, it frequently endangers life. It is caused by stoppage of perspiration from a draught of air, or from standing in the cold after vigorous exercise. It may be confined to the nose, when it is called nasal catarrh, or may extend throughout the respiratory system.

Symptoms.—Apparent laziness and slowness; frequent cough and snorting; watery discharge from the nose and eyes, with inflammation; want of appetite; nasal membrane unusually red; membrane lining the eyelids and covering the eyes congested; pulse feeble and perhaps increased; sometimes swollen glands and sore throat, in which case the appetite declines, and swallowing even water is difficult, the horse holding the water in his mouth, or plunging his nose into it; the urine grows scanty, thick, turbid, strong and highly colored; the dung passes in small quantities and is covered with mucus; the nasal discharge becomes thick, white or yellow, or of a slate-color, when fever symptoms disappear, leaving no cause for alarm, excepting the liability to terminate in glanders, chronic cough, pneumonia, or the like, if neglected. Catarrh is often preceded by some constitutional trouble, and is distinguished from simple cold by local excess of blood in the mucous membrane lining the larynx, pharynx and glands near those parts, by which the natural secretion is at first stopped and then returns, or is replaced by a mucous, watery discharge, or mucous matter with pus.



136. SYMPTOM OF COLD OR CATARRH.

TREATMENT.—In the first stages, attended with staring of the coat, shivering, lassitude, yawning, watery discharge from the nose and eyes, give a half-ounce of tincture of camphor in a mixture formed from the white of an egg and a teaspoonful of oil beaten together, and added to a gobletful of water; repeat the dose in half an hour if shivering continues. Aconite is needed when fever comes on with quick and full pulse after the cold symptoms; for respiration exceeding fourteen per minute; for a skin alternately hot and cold; dry, short, and frequent cough; mouth hot, and appetite bad; highly colored urine. It is not suitable for the late stages, or for fever of a weak or low type. Give nux vomica when there is fever of a low type, with gastric symptoms, constipation, and white or shining coat on the tongue. Administer mercurius for thick mucous dis-

charge from the nose; sore throat; swelling of glands under the jaw; difficult swallowing; slobbering; sticking together of the eyes. Should there be prostration after the active symptoms have declined, bad appetite, swollen legs, great running at the nose and eyes, arsenic in some form will be useful, five to ten drops of Fowler's Solution every four hours being a suitable dose. When the attack comes on in dry weather, during the prevalence of dry, cold winds, in sudden changes of weather, or when cough is present and threatens bronchitis, give bryonia. Kali bichromicum should be given for a discharge of thick, yellowish matter, accumulating on the sides of the nostrils; cough; ulceration of the membrane; swelling under the jaw; very offensive odor. Put ten grains of the salt in one quart of water, and give a wine-glassful of this every two or three hours. This may be used as a wash by injecting it into the nose.

Give the horse a clean, well-drained, and well-ventilated box, with plenty of fresh air, *without draughts*. Give food in moderate quantities, allowing only bran-mashes for a few days. Night and morning clean out the nostrils as well as possible, and let the horse inhale fumes of vinegar. This may be done by putting in a nose-basket bran soaked in hot water, and pouring in a half-pint of vinegar. (See cut 137, page 603.) Or vinegar may be poured on a hot brick placed under the nose. Another way is to boil a mixture of bran and vinegar in a kettle, and convey the steam to the nostril by a flexible tube. In any case, care must be taken not to scald the nasal membrane with the steam. The inhalation causes sneezing, and thus the discharge of obstructing pus. The fumes of burning tar or balsam of pine are very grateful and often open the passage.

BRONCHITIS.

This is an inflammation of the air-tubes which unite the lungs and larynx. It is liable to be mistaken for inflammation of the lungs, though in the latter the cellular tissue is affected, not a mucous membrane. This distinction should be carefully observed, as the symptoms and treatment for bronchitis and for inflammation of the lungs are different. Its causes are exposure to cold and wet; washing when the horse is heated, without thoroughly drying afterward; sudden changes in weather; standing in draughts of air, or being uncovered after violent exercise; high feeding and inadequate work; being turned out of a warm stable into the cold, or put into a hot stable directly after being on pasture, especially in young horses. It occurs more often in autumn and winter, particularly when the weather is wet; east winds and dry atmosphere long continued encourage it.

Symptoms.—The symptoms at first are the same as those in ordinary

cold, then a sudden, complete failure of appetite; pulse feeble, but steadily rising; mucous membrane of the nostrils very red; the cough grows feeble, hoarse, prolonged, or may be entirely stopped, usually attended with slobbering, repeated attempts to swallow, and other signs of sore throat; nasal membrane, at first dry and red, becomes moistened with watery or thin, yellow secretion; perhaps a thick mucous discharge with pus from nostrils; temperature of some legs lower than that of the others; breathing difficult and rapid, being thirty or more; later, phlegm accumulates, causing continuous coughing; the dry, harsh sound is soon succeeded by a gurgling, caused by secretion of mucus, called the "mucus râle"; in some parts wheezing.

In extreme cases the nasal discharge is entirely stopped; the lining membrane of the nostrils is very red, or purplish, dry and swollen; cough stops, or recurs constantly without giving relief; if the lungs are involved, there are loud bronchial breathing and diminished murmur in breathing, and if the latter wholly ceases a crackling sound is heard, attended by cold extremities and deep breathing; complete loathing of food; weaker, quicker, nearly imperceptible pulse; deeper breathing, followed by quicker, so that the horse cannot lie down, but stands with extended legs; in the absence of relief the animal dies from suffocation in eight or ten days from the beginning of the disorder. If inflammation declines, the nostrils give a free discharge; the pulse and breathing become slower; the horse lies down; and only a soft cough and weakness remain, which are soon cured.

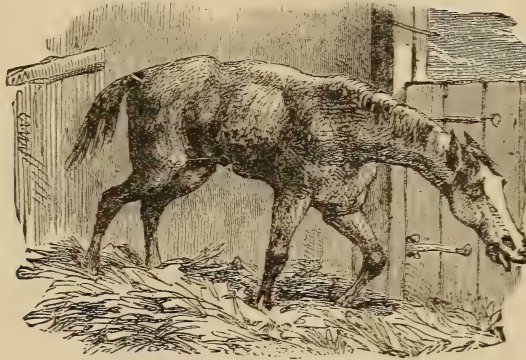
In moderate cases the nasal discharge is free; the cough distressing but loose, with free discharge from the bronchial tubes; pulse fifty to seventy; breathing not much increased, but disturbed; loss of appetite not complete. Though not so dangerous as the extreme cases, this form may result in a change of structure, or destruction of the bronchial tubes, causing thick wind. Acute bronchitis sometimes terminates in a chronic form, the discharge and cough continuing, without inflammation. In many cases it is complicated with inflammation of the lungs.

TREATMENT.—Aconite should be given for the first symptoms of feverishness; hot, dry mouth and skin; quick, full pulse; short, dry cough; difficult breathing; great thirst; red nasal membrane and suspension of its normal secretion. It is generally best to alternate aconite with bryonia. Give bryonia when the *large* air-passages are principally affected, the



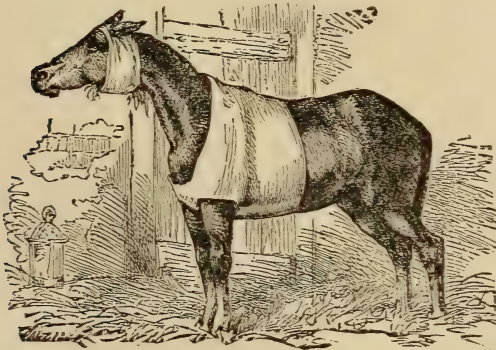
137. A STEAMING-BAG.

inflammation having extended down to them along the larynx; when the "mucous râle" is at the branching of the windpipe, with frequent, dry, irritating cough, increased by motion; thick mucous discharge from the



138. THE COUGH OF CONFIRMED BRONCHITIS.

throat and nostrils; also when the horse coughs upon trotting, but not when at rest. It is often advantageous to alternate the bryonia with aconite. Phosphorus is to be chosen when the *small* air-passages are primarily and chiefly affected, small moist rattles being heard, and the cough



139. DRESSING FOR PROTECTION OF THE THROAT AND LUNGS, AND FOR RETENTION OF COMPRESSES.



140. EIGHT-TAILED BANDAGE FOR THE THROAT.

being painful and suppressed, or loud and dry, but with scanty discharge from the nostrils. Give belladonna for severe and violent paroxysms of coughing, especially in the evening; pain in the throat; difficult swallowing; rapid breathing; sneezing. It may often be beneficially alternated

with mercurius. Mercurius is indicated by cough which is worse at night, moist, and marked by slobbering; eyes and nose red; the nasal discharge thick and plentiful, though soreness continues in the throat and chest; breathing more frequent but not deep; mucous rattles in the windpipe and lower passages; glands swollen. A copious flow of mucus, loose cough, loud rattling and gurgling in the bronchial tubes, and distressed breathing call for antimonium tartaricum. Kali bichromicum is efficacious for tough, ropy, sticky phlegm, for tongue covered with yellow fur, and for confirmed cases. Give arsenicum when marked weakness and poor appetite continue after the foregoing remedies have reduced the active symptoms, and the soft cough and nasal discharge progress. In the general care provide for the horse a large box, airy, but free from draughts, dirty bedding and other offensive matter; plenty of clean straw; comfortable clothing; rubbing of the legs night and morning with the hands, and bandages of flannel applied to them; bran-mashes, gruel, water (not very cold); when recovering, boiled oats, carrots, green food, turnips and malt-mashes. For costiveness use back-raking and injections. Steaming the nose (see under Catarrh) is often useful. For great weakness and prostration at any stage, stimulants, such as aromatic or carbonate of ammonia, or wine, should be used.

INFLAMMATION OF THE LARYNX.—LARYNGITIS.

In this the upper part of the windpipe is more seriously inflamed than in sore throat and cold, though it is usually attended by cold. Unless checked it is liable to cause death by suffocation, or it may inflict permanent injury upon the larynx, disturbing the wind, or may terminate in chronic cough, pneumonia or bronchitis. Chronic laryngitis may result from the acute form, or may come gradually without previous severe inflammation, and has less violent symptoms. Its causes are the same as those of Bronchitis (which consult).

Symptoms.—A rough, rasping, harsh sound at the top of the windpipe; short, hoarse, hard cough, usually convulsive, produced easily by pressing the top of the windpipe, the cough being so painful as to cause stamping or uneasy movements about the stall; outside of throat hot, painful and swollen; breathing short and difficult, being from fifteen to twenty per minute; pulse from sixty to seventy, hard, quick and full; mucous membrane swollen, perhaps tinged with blood; swallowing difficult; the animal quids hay and sips water, the latter again



141. LISTENING TO THE SOUNDS IN THE WINDPIPE.

coming out of the nose; thick discharge from the nostrils; slobbering—a favorable indication; the cough later becomes hoarse and not so loud; if the larynx becomes more inflamed, the breathing grows very labored, each breath being marked by a loud snoring; head raised and neck straightened out and stiffened; nose extended; nostrils widely opened; nasal membrane leaden-colored; larynx drawn downward to the chest and affected with spasms, causing a shrill sound; wild eyes; restlessness; increased sweating; irregular and feeble pulse; the larynx becomes sometimes so narrowed that only an opening of the windpipe can prevent suffocation.

TREATMENT.—Aconite is the first remedy to be given when feverish symptoms are noticed, with difficult breathing, full, hard and frequent pulse, scanty and high-colored urine. When the throat becomes hot, swollen and painful, the glands tender and swollen, the swallowing difficult, the cough intermittent, the hay quidded, and the water returned through the nose, belladonna is needed. As soon as the secretion returns to the membranes and the mucous rattle can be heard in the larynx, accompanied with hoarse cough and nasal discharge, mercurius should be given. Spongia is useful for affec-



142. FOMENTATION ON THE THROAT, (See cut 140).

tions of the larynx and may take the place of belladonna for very difficult, slow and rasping breathing, the inspirations being hoarse, the cough hard and barking, or rough, or shrill; also for threatened suffocation. If there be an accumulation of tough, stringy mucus in the mouth, hoarse cough, scanty urine, and constipation, administer kali bichromicum. After all active inflammation has subsided and the notable symptoms

are loss of appetite, swollen legs, debility, nasal discharge, and cough, arsenicum is to be taken. Nux vomica is the best remedy for spasm or sudden closing of the larynx, being then taken in alternation with mercurius solubilis—ten drops of the former and ten grains of the latter being suitable, each placed on the tongue after it has been wiped with a clean sponge.

Provide a loose stall. Let the diet be composed of bran-mashes, carrots, green food, gruel, but no corn. Apply fomentations of hot water to the throat, and steam the internal part of the same, being careful to avoid scalding. For such steaming, hold the nose over a pail half filled with hot water, into which a handful of hay is placed. Other methods of steaming are described under Strangles and may be adopted here. In extreme cases, when suffocation seems imminent, the windpipe should be opened by a skillful surgeon and a tube be introduced to permit breathing.

INFLAMMATION OF THE PHARYNX.—PHARYNGITIS.

This affection is caused by exposure to wet and cold, and by impure air and hot temperature.

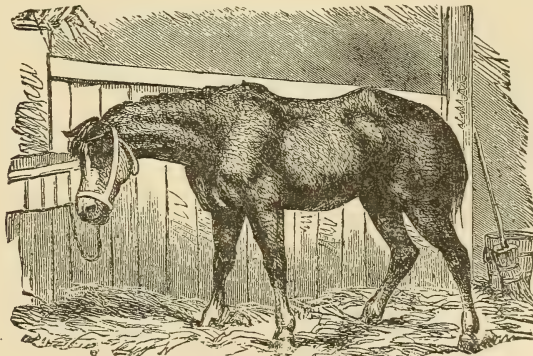
Symptoms.—Sore throat, sometimes difficult breathing and swollen glands of the neck. It has indications similar to sore throat and inflammation of the larynx.

TREATMENT.—Give iodide of mercury and belladonna in alternation every one or two hours. Steam the throat as for Strangles. Keep the animal warm with suitable clothing. If the legs are cold, bandage them. Pack the throat, a piece of sheep-skin, with the wool, being suitable for this purpose. Give bran-mashes, and keep the bowels open.

CONGESTION OF THE LUNGS.

Congestion of the lungs is a gorging of the lungs with blood, and is caused by general weakness, which prevents the action of the heart that is requisite to the full purification of the blood and circulation; by a long day's hard work; by undue riding or driving, especially with a following exposure to wet and cold; by long runs. It is always present in the beginning of pneumonia.

Symptoms.—If the disorder occurs in the field, the horse suddenly stops, with anxious or distressed look; hanging head; expanded, puffed-out,



143. A FREQUENT POSITION IN CONGESTION.

purple nostrils; protruding, blood-shot eyes; hurried, labored breathing, going up to eighty or one hundred a minute; panting flanks; small pulse, reaching to eighty or one hundred a minute at the bronchial artery; feeble, disturbed heart, without the rattle incident to lung-inflammation. When

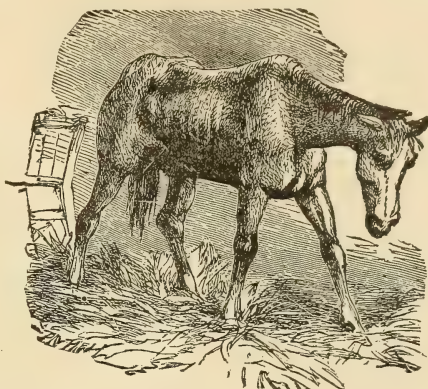
congestion results from a chill after hard work, the horse stands with the fore legs wide apart; head stretched forward toward the coolest place in the stable; breathing rapid and labored; heaving flanks; skin dry, or covered with cold sweat; legs and ears very cold; pulse not hard but quickened; mucous membrane of nose and whites of eyes of a light-purplish color. In extreme cases the animal trembles all over, and the ears and legs are as cold as in death; the pulse can scarcely be felt; the bowing of the head and other marks of brain-trouble show that death is imminent. If the symptoms do not end fatally, they are liable to lead to bronchitis or pneumonia.

TREATMENT.—Treatment may be favorable if applied early; first remove girths and other impediments to free breathing. Should the horse show symptoms when away from home, he should be given a quart of warm ale, or some spirits and warm water, and be left over night, if a *warm, comfortable* stall can be found. If in the stable, and the legs are cold, they should be moistened with mustard and rubbed, when the following process should be observed, *if enough wraps can be secured*:—Let a blanket soaked in and partially wrung out of very hot water (not so as to scald the animal) be placed over the back, and fastened around the sides and under the chest, over which place a *warm* sheet and, in addition, two other woollen blankets. In fifteen minutes the under blanket should be dipped and wrung out of hot water, but *done quickly*, and left on for about two hours, when a dry one must be substituted, and the fourth or outer one be removed, as it is not desirable to sweat these cases too much; this, however, may be avoided by admitting fresh air as soon as the skin begins to act; but great care must be taken not to give a chill after the operation. If the horse will drink scalded oatmeal and tepid water, the sweating process will be more quickly produced. Ammonium causticum has been proved to be the best remedy in connection with processes such as the above. It should be administered every hour for the first four or six hours; then every second hour. For treatment when this disorder is complicated by inflammation of the lungs, consult the following section for full and detailed directions.

PNEUMONIA.—INFLAMMATION OF THE LUNGS.

This is an acute inflammation of the parts composing the lungs and has the same causes as congestion. Indeed, it usually follows congestion, and also results from influenza, catarrh and bronchitis. It is likewise occasioned by the breathing of pungent, impure vapors which rise from dung and dirty litter; by taking the horse suddenly into the cold or wet after standing in a close, warm stable; by such exposure after having clothing on in the stable; by unwise feeding.

Symptoms.—After a cough for several days the horse shivers and quits eating; hangs his head in the manger or stretches it out; becomes listless; stands all the time with outstretched legs; if the sides are sore, groans when made to move around; dilated nostrils; nasal membrane, at first unusually red, becomes purple; mouth and breath hot; legs and ears cold; pulse at first hard, and goes up to sixty or ninety a minute, but later is full and oppressed, and still later small, advancing from one hundred to one hundred and twenty; breathing quick and labored; working of the wings of the nostrils; heaving flanks; cough short and painful, or ceases entirely; urine scanty and high-colored; bowels usually bound, but at last become relaxed (diarrhœa being a most dangerous turn); abscesses in the lungs and gangrene are followed by offensive breath and great weakness; the horse staggers, being able to lie down only a short time, and strikes his head about; the mouth finally is cold, the pulse imperceptible, and death ensues.



144. POSITION IN A BAD ATTACK OF PNEUMONIA.

If the pneumonia be of a *typhoid* form, the horse for several days manifests symptoms of catarrh; remains dull; refuses food; pulse soft—60 to 70 per minute; breathing rises to about 20, *without heaving of flanks*; occasional cough, which the horse tries to check as if in pain; dilated nostrils, with working of their wings; nasal membrane becomes leaden, generally with a slight yellow or red discharge of a watery nature; the horse does not lie down but stands with outstretched neck; coat and skin dry; ears and legs cold; dull sound heard upon striking the chest; pressure of the finger between the ribs produces great pain; heart-beats intermittent; placing the ear to the chest one sometimes detects a rattling sound, but usually only the beating of the heart; in bad cases, mouth cold and breath offensive; finally the animal is unconscious, staggers, falls and dies. In unfavorable cases death follows after twelve or fourteen days.

There are four stages, generally distinguished by the sounds in the chest: (1). In *capillary irritation*, the murmur of breathing is diminished and becomes harsh and dry, or confused. (2). In *engorgement*, there is a crackling sound, like that made by drawing the hair near the ear between the finger and thumb, known as “crackling râle.” (3). In *hepatization*, there is an absence of sound in some parts; in others, a noise like that of

blowing into a quill; should one lung be sound, its natural murmur is increased. (4). In *purulent infiltration*, abscesses form, *without sound*, or the lung is broken, opening into the bronchial tube and producing a deep sound, like that caused by blowing into a jug; sometimes a tinkling sound occurs, owing to pus in the cavity; if pus enters the bronchial tube, a gurgling sound arises, with coughing, by which a thick gray or white matter is thrown out of the mouth; symptoms of gangrene are also detected, but are attended by extreme offensiveness of the breath and the discharge from the mouth.

TREATMENT.—For shivering, lassitude, hurried breathing, quick and weak pulse, cold nose, ears and legs, and rough coat, give ammonium causticum every half-hour until the coldness disappears.

In the *first* stage (*capillary irritation*), and in congestion marked by quick, full pulse, dry, hot mouth, reddened mucous membrane of the nose and eyes, and disturbed breathing, give aconite every half-hour or hour. As soon as the inflammatory stage has set in, marked by crackling sounds in the chest, heaving at the flanks, oppressed pulse, cold extremities, and discharge of reddish or yellowish matter from the nose and mouth, phosphorus should be given alternately with aconite every two hours. Bromine is highly beneficial when inflammation runs so high in the lungs and adjacent parts as to threaten suppuration or gangrene. Prepare it as follows:—In a six-ounce bottle put twelve drops of bromine, at once fill it up with water; of this mixture one ounce is the dose, but it must be given in four ounces of water, as it is very strong. Bromine is very volatile, and the bottle containing it should not be opened or exposed to the light more frequently than is necessary. In ordinary cases of pneumonia, bromine does not act so well as phosphorus, but there have been cases in which the latter failed and the former succeeded, and *vice versa*. Bryonia should be alternated with phosphorus every hour in the *third* stage (*hepatization*), marked by absence of sound in some parts, or bronchial breathing in others; also, when the breathing has become quickened and not so deep; sometimes catching, with painful, short, suppressed cough; or loose cough with discharge of frothy phlegm; pain from striking or pressing between the ribs. Tartar emetic is useful when the *fourth* stage has set in, and is called for by loose, rattling cough and free discharge of mucus from both nostrils. After the active inflammatory symptoms have subsided, and the pulse, though quick, is small and weak, especially where the breath becomes offensive and symptoms of a typhoid character occur, and when effusion has taken place in the chest, no time should be lost in giving arsenicum every two or three hours. In extreme cases a mustard-lotion should be applied to the sides with rubbing, and repeated the next day if necessary. Avoid blisters and like irri-

tants. Put the horse in a well-ventilated stall, *without draughts*. Rub the legs well with the hand and bandage them with flannel. Use an extra blanket if the horse be chilly. Give green food if possible, otherwise a little bran and oats (previously soaked in boiling water), and hay. If the horse refuses other food, sustain him with oatmeal gruel carefully prepared. Keep constantly in the stall pure, cold, soft water for the horse to drink as he will. If the disorder terminates in simple "hepatization," the horse may be moderately worked, if the diet be carefully regulated, the stomach being nearly or quite empty when work is required. One of the most common, and yet one of the most fatal expedients in the treatment of pneumonia is blood-letting, not merely in small quantities, but in repeated and exhausting amounts. The result is an increase in the action of the heart as a consequence of weakness, and this is taken as the signal for further bleeding, and the animal succumbs and dies, not simply from the blood that is lost, but because he is not strong enough to bleed sufficiently. It is a practice that is based upon ignorance, without a single recorded result in its favor.

CONSUMPTION.

Consumption, which is rare in horses, is a formation of tubercles in the lungs, which increase and ulcerate. It results from a constitutional tendency, aggravated by exposure to damp and cold; pasturage on marshy ground; over-exertion.

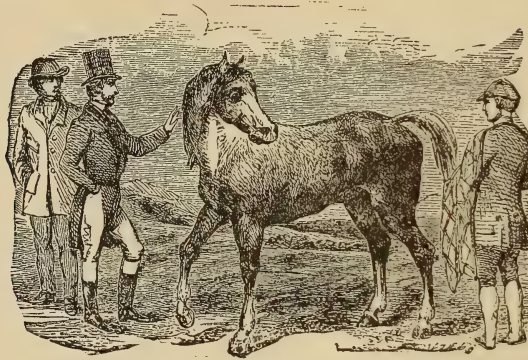
Symptoms.—Much coughing, dry or moist, with pus discharged from the nostrils, sometimes in great quantities; loss of flesh in spite of a good appetite; short breath; weakness; mane falls off; small sores on the withers; diarrhœa and death.

TREATMENT.—The disease is usually not noticed until it is settled. Then it is incurable, but much can be done to give relief by general care. Keep the horse well stabled, avoiding north and east winds, free from excitement and alarm, warmly clothed and well-rubbed. When the weather is warm and the sun shining, allow him to be in the open air, stabling him as soon as the evening draws nigh. Give nourishing, easily digested articles of food, as fats, consisting of linseed, corn, beans, peas and potatoes. Cod-liver oil, the hypophosphites, or the wheat phosphates may be used with advantage. Inhalations of carbolic acid, sulphur, and pine tar may assist in giving relief. These may be used by steaming with hot water, or by burning the articles and allowing the animal to inhale the vapor. The steaming-bag represented by cut 137 will be found of service in such inhalations. At best, one can only hope to prolong the life of a suffering animal which can be of little service.

PLEURISY.

Pleurisy is an inflammation of the serous membrane which lines the chest and forms a cavity for the viscera contained therein. Its causes are exposure to cold, wet, or any sudden chill; atmospheric influence, pleurisy being a frequent accompaniment of influenza; extension of inflammation from the substance of the lungs. It may also be a local result of some internal fevers.

Symptoms.—These so nearly resemble those of pneumonia that they need careful study. The horse first shows signs of fever, with coughing and much restlessness, after which he remains standing still, and is unwilling to move; the flanks are very tender, and are peculiarly tucked up; the legs are more nearly erect than in pneumonia, though the head is outstretched; pulse from sixty to eighty in extreme cases, and yet very



145. A HORSE SUFFERING FROM PLEURISY.

small and quick; breathing uneven, and from twenty to forty; the breath is drawn in quickly and with interruptions, but expelled slowly; the countenance indicates pain; the animal looks at the sides frequently in a dejected manner; pressure between the ribs is followed by a grunt and an attempt to bite the attendant; upon turning around the horse gives a grunt, and the cough which usually occurs is checked, or cut short; partial sweats and twitching of the muscles are not uncommon; extremities variable in temperature, usually cold as in pneumonia. In unfavorable cases the breathing is quickened; the pulse grows more frequent and small; the tongue is coated and offensive in odor; a long breath is suddenly checked and a grunt occurs; inflammation continuing, breathing is more limited; pulse less dis-

tinct; the horse is restless, paws, rises and lies down frequently, wanders unconsciously around the stall, becomes worn out, falls and dies.

The symptoms of this disease which distinguish it from others with similar indications, especially *pleurodynia*, are these:—The sound as of the palms of the hands rubbed together, heard upon placing the ear to the sides of the chest; the variation in pulse and breathing; the animal appearing alternately better or worse at uncertain hours; the attempt to check the painful cough; the pain and grunt incident to pressure or striking on the diseased part (pain being caused by manipulation, *without pressure*, in *pleurodynia*); the short, catching breath, and the difference in time between taking in and expelling the breath.

TREATMENT.—Aconite and bryonia are the best remedies for the primary or inflammatory stage, and should be given alternately every hour until a perceptible change occurs in the pulse and respiration, and then at intervals of three or four hours. After the inflammatory symptoms have disappeared give a few drops of arsenic or digitalis to promote the action of the kidneys and prevent effusion. Observe the same general care as to stabling, diet and other particulars as was laid down for Pneumonia. If there be evidences of water in the chest, consult the remarks on Hydrothorax.

BROKEN WIND.—HEAVES.

This disorder is most common in low-bred and cart horses, and is a difficulty in breathing, marked by a double expulsion of the breath, with fits like those of asthma. It originates in disorder of the nerves of the lungs and stomach, or rupture of some air-cells, and is excited by irregular work, improper feeding, such as clover-hay, or any dusty hay. It may follow chronic cough, or inflammation of the lungs and bronchial tubes.

Symptoms.—Short, suppressed, and very feeble cough, often attended with expulsion of wind from the anus; breathing consists of one effort at drawing in air and two at expelling it; indigestion, with oats and hay in the dung; when the animal draws a heavy load or trots rapidly, the flanks heave violently, with a wheeze in the breathing in many cases, *not all*, which does not cease at once when the animal is brought to rest; when the horse is in the stable, if the ear is applied to the chest, especially at night, a wheeze and rattle are heard, which are sometimes sonorous; suppressed natural murmur of breathing, with increased resounding from a stroke, and difficulty of breathing.

TREATMENT.—Broken wind, in early stages, is curable; after it has run a considerable time without treatment, it can only be relieved. Give

arsenicum when there exist a wheezing cough and sound when breathing; short, hurried, difficult breathing when going up a hill. Give *nux vomica* when the symptoms are aggravated, especially those showing indigestion, such as passage of hay and oats, windy stomach and intestines, and thin, seedy appearance of the animal. One of the best remedies for this disorder, and one which rarely fails to give relief, is *lobelia*. It should be given in doses of a half-teaspoonful to a teaspoonful of the tincture two or three times a day. The following formula will also be found useful:

Tincture of lobelia,	4 ounces.
Fowler's Solution,	$\frac{1}{2}$ ounce.
Iodide of potassa,	1 ounce.
Water,	4 ounces.

Mix.

Give a teaspoonful three times a day. Give the best and most nourishing food frequently, but in small quantities, *avoiding chaff and dusty hay*. Do not give more than five pounds of hay in a day, but increase the allowance of carrots, barley, oats, and *boiled* corn, observing a rational alternation in their use. Impose slow work or three or four hours daily of walking, but give no exercise soon after eating a meal.

THICK WIND.

Thick wind often results from pneumonia or bronchitis, and is most frequently found in low-bred horses with badly-shaped chests, which eat ravenously. It is a thickening of the membranes lining the bronchial tubes, so that the horse, when violently worked after feeding, or when the stomach is full, has defective breathing, *with blowing but not noise*.

Symptoms.—Short, quick, difficult breathing during any exertion, especially while ascending a hill.

TREATMENT.—This is incurable, but is relieved by the use of arsenicum, *nux vomica*, ammonium causticum and bryonia, and by the general care to be observed in Broken Wind (previous section).

WHISTLING.—ROARING.—BLOWING.

An obstruction of the air-passages produces sounds of differing character, and from these the horse is called a *whistler*, *roarer*, *blower*, *grunter*, and the like. These difficulties are often taken from the sire or dam, and are promoted by laryngitis, bronchitis, and other respiratory diseases; also by the inflammation which often results from tight reins, and from always driving a horse on the same side, by which the muscles of the larynx on the

side next to the other horse are not exerted as much as the others and thus become weak (the horse then becomes a roarer, even without inflammation). Tumors and other swellings, mechanical injuries, indeed anything that obstructs breathing, may cause the disorder.

Symptoms.—Generally a harsh or sawing noise in the drawing in of the breath when the horse is put on a canter or gallop; in some cases it is sonorous, in some, whistling; in extreme cases, the noise is heard both in taking in and in expelling the breath. The disorder is best determined by galloping the horse to produce the sound. Another method is to hold the bridle and alarm the horse by a threatened blow with a stick, when the breath will be sudden, and accompanied with a grunt or roar if this trouble exists. In acute cases the larynx is inflamed.

TREATMENT.—Give belladonna for *recent inflammation* of the membrane of the larynx, and kali bichromicum for *ulceration* of this membrane. Chronic roaring can not be cured, though the cutting out of some of the funnel-shaped cartilage on the larynx, the use of a tube in the windpipe, and a strap passed around the nose so as to limit the ingress of air, are said to have been applied with advantage by an expert.

SPASM OF THE DIAPHRAGM.—HICCOUGH.

This is a spasmodic contraction of the diaphragm, or the muscular wall which separates the chest from the abdomen. It is caused by irregular nervous influence which results from long work upon an empty stomach, or quick work without preparatory training.

Symptoms.—The heart-beats may be heard on either side, and are unnaturally loud and quick, though their force is not increased as much as the sound; almost imperceptible pulse; heaving of the sides; flanks move little or not at all, but are unusually full; hiccough is always present, being a sudden contraction of the breathing muscles, *especially of the diaphragm*, followed by an equally sudden relaxation, causing a rapid taking of breath, whose suddenness and force will be observed. Carefully distinguish this from Palpitation of the Heart, and compare the symptoms of the latter.

TREATMENT.—The disorder generally yields to treatment in a very short time. Give nux vomica every half-hour, or stannum once in one, two, or four hours. The horse should not be driven rapidly or a long distance.

NASAL GLEET.

We apply this term to any chronic discharge from one or both nostrils, whether it originates in the nasal chambers, in the nasal cavities, in

the pouches of the throat, in disease of the bones of the face, in caries of the teeth, or in loss of nervous power. The symptoms of the disease arising from these respective causes are sufficiently distinct to warrant a division into the five classes given below, under which the special treatment needed for a particular form will be given as it is demanded, with the remedies and their applications for all placed last. It is important to study this disease carefully; it is serious, but undue concern has been sometimes felt at its appearance, because it has been mistaken for glanders.

(1). SIMPLE NASAL GLEET.

This results from simple catarrh that has been neglected.

Symptoms.—Its symptoms are a whitish, yellowish, or greenish discharge of varying quantity from one or both nostrils, sometimes partially lumpy and clotted, and adhering to the sides of the nostrils; nasal membrane of a dull, leaden color and unhealthy look; in horses of low condition ulcers may appear close to the exterior of the nostrils, though this symptom indicates a transition to glanders; the gland under one or both jaws is slightly swollen, but not adhering to the jaw-bone, though perhaps tender; appetite poor; strength reduced; coat staring; work done languidly; nasal discharge exceedingly offensive, especially in poorly-ventilated stables.

(2). PUS IN THE SINUSES.

After severe catarrh dense pus sometimes fills the cavities of the nose and face and escapes from the nostrils.

Symptoms.—The symptoms are a swelling of the glands under the jaw; swelling of the face on the affected side; the escape of the pus is impeded. The presence of pus in the cavities may be determined by tapping with the hand on the side supposed to contain it; its presence will be marked by a dull sound. If but one side be affected, the dull sound of the diseased side will be in contrast with the hollow sound of the healthy one.

Beside the treatment hereafter noted, a circular piece of bone must be removed by a veterinary surgeon, half-way between the margin of the orbit of the eye and the middle line of the head, and a similar opening be made into the jaw-bone above the cheek-bone. Then remove the matter thoroughly with tepid water and a syringe, following this up three times a day with an injection of hydrastis-lotion.

(3). PUS IN THE POUCHES OF THE THROAT.

The inflammation and formation of pus attending nasal catarrh may extend to the throat, where the pouches collect pus as in strangles. The

pus may escape into the nose or the throat, or pass through the skin by an opening at the angle of the jaw. If it escape by the nose, the discharge is usually from one nostril, and the glands under the jaw are enlarged. There may be no pus on the other side, or it may be there shut up and solidified. The nasal discharge comes and goes at regular or irregular intervals. When the matter passes into the throat, it threatens suffocation. Occasionally an opening occurs both in the throat and at the angle of the jaw, when the pouch is enormous, the amount of pus very great, and the ulceration very considerable. If both sides are affected, the breathing may be difficult, and suffocation threatened. Should the horse in addition rear up, and have a thick, gummy coat, glanders may be reasonably suspected.

In addition to the remedies hereafter named, it is very useful to turn the horse loose and let him feed from the ground or floor. Indeed, in some mild cases cures have been effected by allowing the horse to go into the yard or field where his head is nearly always hanging down. In this way the pus naturally falls through the nostrils, while the nose very often remains dry if the same horse is tied to the rack. An injection of iodine twice a day should be given by a skillful practitioner, and the same medicine administered internally. It may be necessary to perform an operation for the removal of the pus and the washing out of the pouch with a lotion of hydrastis or iodine; the operation can be done only by a practitioner.

(4). ABSCESS OF A DISEASED BONE.

After severe catarrh, especially in colts, an abscess may occur on the bone in one side of the head.

Symptoms.—The symptoms are swelling and inflammation of the nasal membrane; difficult breathing, often causing a suspicion of polypus; the nasal discharge is variable, occurs *when the head is raised*, and may be preceded by a strangling cough. An operation by a surgeon may be needed.

(5). CARIES OF THE BONES OF THE FACE.

A nasal discharge sometimes follows an organic disease of the nasal or upper maxillary bones, or of those on the side of the head; or it may be caused by the presence of foreign matter in the nasal chamber, or by a projecting tooth, perhaps carous.

Symptoms.—The symptoms of this disorder are a flow of matter only from the affected side, very offensive, often tinged with blood and mingled with particles of dead bone; the lymphatic glands are swollen but do not adhere to the bone. The foreign substance, the tooth causing the trouble, or the diseased bone, must be removed.

TREATMENT FOR ALL FORMS.—Give hydrastis for copious discharge of adherent glue-like matter; enlarged glands under the jaws; inflamed nasal membrane; staring coat; constipation; scanty and high-colored urine. Potassa bichromate is demanded by a discharge of thick, yellow or greenish pus, very offensive; swollen glands; quickened breath and pulse. Mercurius is valuable for all offensive discharge of mucus mingled with pus; glands enlarged and tender; nasal membrane appearing red, as if full of blood-vessels; sneezing; sore throat; also when the bone is diseased. Give iodide of arsenic for a free discharge of a thin, irritating fluid which induces rawness of the edges of the nose; relapses of the disease, and attacks resulting from exposure to cold and wet; loss of flesh, appetite and strength. Fowler's Solution has also been beneficially used for the conditions named for iodide of arsenic, and five to ten drops may be taken two or three times a day. Though internal remedies will suffice for cases that have not continued long, about a half-pint of either of the following injections may aid such internal remedies, and it may be necessary in some instances, especially in advanced stages, for a surgeon to administer them: (1). Tincture of iodine, two drachms in a pint of water. (2). Bichromate of potash, one drachm in a pint of water. (3). Hydrastia, a half-ounce in a pint of water. (4). Sugar of lead, one drachm in a pint of water. (5). Sulphate of zinc, one drachm in a pint of water. The first is the best.

BLEEDING AT THE NOSE.

This is caused by weakness of the blood-vessels, or by an increase of the volume of blood in the nasal membrane as a result of excessive exertion. It is often only a symptom of glanders, polypus, or other ailment. It may also result from a blow or wound.

Symptoms.—The form which is symptomatic of another disorder will be easily recognized, as also that which results from a blow or wound. We need then to give a description of that which comes from weakness of the blood-vessels. It may be either active or passive. The *active* is most common in horses that are fat or have an excess of blood, and unless it results from quick work, may be regarded as an inflammatory disease of the membrane, the blood flooding the membrane and extending from the capillaries, which are weakened by pressure of blood and lack of cool air. There is a full, bounding pulse, with other feverish symptoms of derangement. In the *passive*, the fever-disturbance is not present. This form gives little occasion for fear of fatal results, but it should be carefully regarded, as it may be only the beginning of glanders.

This disease may be confounded with bleeding from the lungs, though

its flow of blood is found only in one nostril in the great majority of cases, while in bleeding from the lungs it comes from both, is accompanied with coughing and is more or less frothy, escaping also from the mouth.

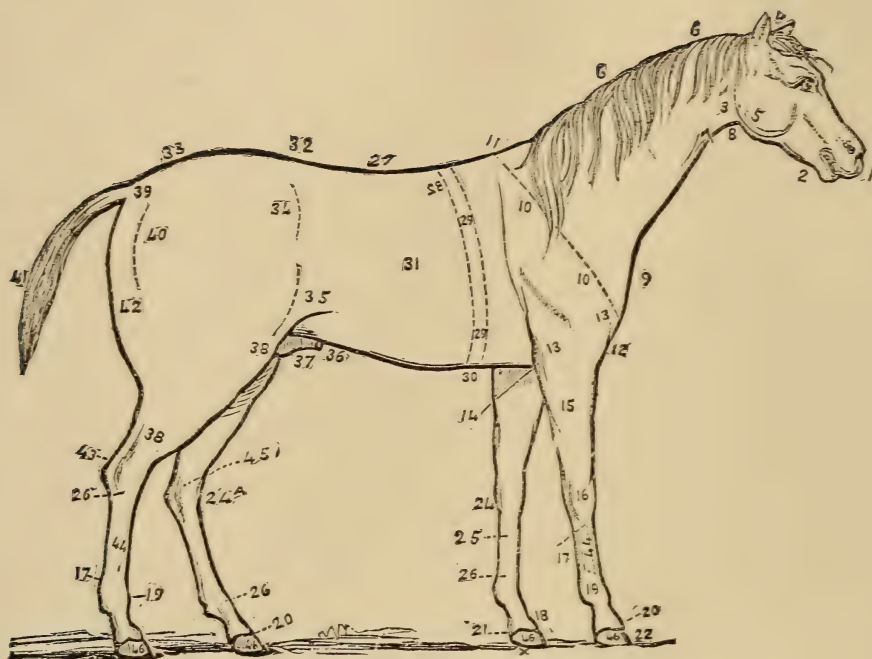
TREATMENT.—When the bleeding results from disease, that disease must be treated. Aconite should be given for acute bleeding not resulting from another disease—ten drops every ten minutes until the bleeding stops, and then every four hours for a day or two. Arnica is better, given internally and applied locally as an injection, when a local injury causes the bleeding. It is also good for the passive cases, given once in ten minutes while the flow continues. Extract of hamamelis may be used internally and locally, and is an efficient remedy. Cold water dashed on the face is a valuable aid. It may be applied by saturated cloths often changed, or poured on from a considerable height. It may be well to tie the head up above its normal height. In persistent cases, throw into the nostril a spray of dilute alum-water, or salt-water, and even plugging of one nostril (both must never be closed at the same time) with pieces of lint or soft cotton, fastened by a cord with which to withdraw them, may be required. Give a diet of bran-mashes during the treatment. Avoid tight collars.

POLYPUS IN THE NOSE.

This is a soft tumor hanging on a stem on the mucous membrane or cartilages of the nose. It is streaked with blood-vessels, is so spongy as to take in and retain air and dampness, which makes it grow larger in damp weather than in dry. There may be one or more.

Symptoms.—At first, obstructed breathing in the affected nostril, in which the passage of air will finally be wholly stopped; deformity of the bones of the face; nasal gleet or roaring may first call attention to the trouble in the nostril; by looking up the nostril one may see a pear-shaped, inelastic, movable polypus, which seldom bleeds; striking on the affected part produces a dull sound; sometimes a mattery discharge, and occasionally bleeding. These tumors may form in the closed cavities and pharynx.

TREATMENT.—A practitioner may remove the tumor by cutting, torsion or ligatures. Torsion is the snatching away of the tumor with forceps, and may injure the nasal membrane and the bone to which the tumor is attached, and may also cause considerable bleeding, though it is not dangerous. If the tumor be low down, any one may firmly tie a strong, fine string around the stem, leaving it there until it causes the tumor to drop off. If it be high up, it may be necessary for a surgeon to slit the false nostril before the polypus can be removed. After removal a solution of nitric acid should be injected into the nostril to prevent a reappearance.



147. SKETCH OF THE HORSE.

Principal Points and Parts to be Examined for Defects, Injuries and Disease.

- | | | |
|---|---|---|
| 1. Muzzle. | 16. Knee, or Wrist; sometimes swelled, having a fungous growth; or the skin may have been broken. | 29, 30. Girth, or Circumference in Measurement. |
| 2. Place of Fistula from Teeth. | 17, 17. Back Sinew: place of Curb. | 30. Place of Injury from Pressure of Girth. |
| 3. Place of Mumps. | 18. Place of Disease of Skin above the Coronet—Crown scab. | 31. Barrel, or Middle-piece. |
| 4. Place of Poll-evil. | 19, 19. Fetlock, or Pastern-joint. | 32. Loins. |
| 5. Angle of Jaw. | 20. Coronet. | 33. Croup. |
| 6. Crest. | 21, 21. Heel. | 34. Haunch. |
| 7. Place of Fistula from Vein. | 22. Contracted Hoof. | 35. Flank. |
| 8. Throttle, Thropple, or Wind-pipe. | 23. Mallenders; 24A, Sallenders. | 36. Seat of Warts. |
| 9. Shoulder-point: place of Sores from Harness. | 25. Seat of Splint, or Exostosis, on side of Cannon-bone. | 37. Sheath, or Prepuce. |
| 10, 10. Shoulder-blade. | 26, 26, 26. Seats of Bursal Enlargements. | 38, 38. Gas-skin, or Lower Thigh. |
| 11. Withers: sometimes the seat of Fistula: height of horses reckoned from the ground to the Withers. | 27. Back, or spine. | 39. Root of the Dock, or Tail. |
| 12. Front of Chest or Breast. | 28. Place of Saddle-galls, | 40. Hip-joint—Round or Whirl-bone. |
| 13, 13. The True Arm. | | 41. Rat tail. |
| 14. Elbow; sometimes the seat of Tumors. | | 42. The Quarters. |
| 15. Arm, or Fore-arm. | | 43. Point of the Hock: seat of Capped-hock. |
| | | 44, 44. Cannon-bone. |
| | | 45. Place of Spavin. |
| | | 46, 46. Hoof. |

CHAPTER VI.

THE SKIN.

ERUPTIONS.

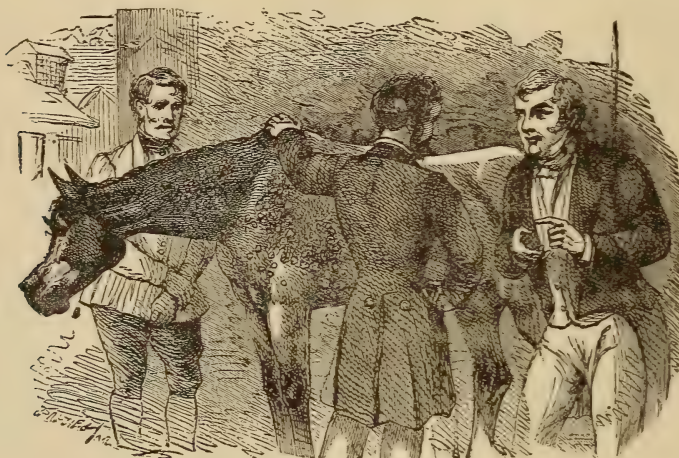
F these the *first* kind are very small elevations, some of which contain a dry, chalk-like substance, while others discharge a sticky fluid that mats the adjacent hair, and then dry up; the *second* are most frequent in horses with a great supply of blood, especially in hot weather, and they come and go suddenly, some being irregular lumps, from the size of a pea to that of a walnut, others flat, covering a space several inches in circumference. They are found in groups over the body, occasionally becoming soft and discharging a gluey fluid, but generally leaving suddenly without this manifestation. In some cases of the second kind fever-symptoms are marked, in others they are obscure if they exist at all. Among the causes are a change of food, shedding, sudden stoppage of sweat from drinking cold water when the animal is heated, indigestion, overfeeding and insufficient work.

TREATMENT.—Nux vomica is the most approved remedy for the first kind of eruptions named, given in ten-drop doses three times a day for four days; the same has proved beneficial for the second kind. If nux vomica fails to reduce the symptoms, give five to ten drops of Fowler's Solution two or three times a day. Give bran-mashes and green food for a few days. The reader must not expect that all eruptions and "pimples" can be cured by this treatment, or by any other single one. The functions of the skin are more complicated and important than most people suppose, and their derangement or interruption will induce grave disorders. They are very similar to those of the skin in man, and the reader should carefully note the remarks made in the introduction to Chapter VII of Part I. He will infer therefrom that eruptions on the skin are very often symptoms of some serious disease, and that attempts to remove them or drive them back are liable to produce great injury. When they are symptomatic of some disease, treat the disease before attempting to effect their cure.

SURFEIT.—PRURIGO.

Surfeit is an excessive itching with no visible cause, most common in colts during breaking, and in horses put to work in warm weather fresh from the pasture. It is caused by sudden change from green to dry food, too much or too stimulating food, want of work, bad food, and low condition. Prurigo is here considered a form of surfeit.

Symptoms.—Itching and rubbing, the hair being thus removed from the affected parts; rough, scaly patches, especially at the roots of the tail



147. A HORSE WITH SURFEIT.

and mane; possibly raw places. The microscope can detect no parasites, as it can in mange.

TREATMENT.—Remove the cause, if it be insufficient work, heating food, poor or deficient feeding, and make the requisite change. Give the horse a good grooming, without brush or comb. Give an occasional sweat. For fever, heated skin, great itching in well-fed horses with much blood, give belladonna. Arnica is preferable for poor condition and deranged digestion. Relieve the parts which itch most by applying a liniment composed of one drachm of carbolic acid and two ounces of glycerine.

GREASE AND SCRATCHES.

Grease is an inflammation and ulceration of the skin on the lower parts of the legs, with a greasy discharge. Its causes are hereditary weakness of the skin, mainly in low-bred horses; cold and moisture; sudden

changes from cold to heat; deranged action of the skin; chapped heels. Scratches are closely allied to grease, though caused by exposure to mud, wet, and neglect in cleaning the legs.

Symptoms.—In the *first* stage, sometimes fever-symptoms; the legs, especially the hind ones, swollen about the hock; red and inflamed skin at the heel; pain from handling the leg, causing the horse to snatch it up and thrust it out awkwardly; straddling gait, with hind legs apart. In the *second* stage, sloughy and unhealthy cracks or ulcers in the skin, extending around the leg, give out an oily-looking discharge, which wets the skin and may drip from the hair; the cracks are found on the back part of and



148. EXUDATION IN THE FIRST STAGE OF GREASE.



149. CRACKS IN THE SECOND STAGE OF GREASE.

above the fetlock, and their discharge increases the inflammation and ulceration of the limb. In the *third* stage, irregular fungous growth, from the size of a pea to that of a walnut, at the bottoms of the cracks, full of blood-vessels which bleed upon handling; the discharge becomes very offensive and pus-like, destroying most of the hair and leaving the balance bristling; the excrescences are red (called "grapes" from their appearance), and finally become cartilaginous. To avoid confusing Grease with Farcy, consult the table of symptoms given in the section devoted to the latter.

Scratches consist in little scaly sores, which become covered with thin scabs, and are likely to be tender and annoying until dry weather has come on in spring, unless treated promptly.

TREATMENT.—For Grease, put on a turnip or linseed poultice. Give exercise morning and evening, bandaging the legs after removing the poultice. Smear glycerine over the parts three times daily. Give bran-mashes for food. Give ten drops of Fowler's Solution of arsenic three times a day, and it will often effect a cure, if promptly given. In the *second* stage, with ulceration, cut off the long hair from the affected part and foment twice a day; dry the leg, and lightly smear over the cracks a lini-

ment of one drachm of Fowler's Solution of arsenic and one ounce of glycerine. This failing, foment the leg, gently dry, and apply four times a day a lotion of one drachm of ruta and one ounce of water. Give arsenicum internally three times a day. In the *third* stage, with "grapes," if the growths be large or hard, they may be removed by caustics, as sulphuric acid, chloride or sulphate of zinc, applied every second or third day; or they may be removed with a sharp knife, the bleeding surface being then touched with caustic. If they be small, with very offensive discharge, add to six parts of carbolic acid one part glycerine, and apply with a very soft brush. After this a speedy cure may generally be effected by a lotion composed of one drachm of carbolic acid and two ounces of glycerine. Liquor arsenicalis and sulphuric acid lotions have proved beneficial, with arsenicum three times daily internally. The diet should be soft and nutritious, such as bran-mashes and good, clean clover.

For Scratches, the above internal remedies are recommended. Apply externally a mixture of aloes and glycerine, or camphorated alcohol and chloral. Corn and other heating food should be restricted or avoided. When the horse has been in the mud in the spring, the legs should be thoroughly washed and rubbed dry upon being taken to the stable, and it is well also to rub on some kind of pure grease or oil after such cleansing. Indeed, the dressing of oil and grease has often been of much benefit in treating cases of scratches, and it is excellent as a preventive, well rubbed in before the horse is taken out for travel in the mud.

CHAPPED OR CRACKED HEELS.

This disorder is caused by washing the heels and not drying at once, over-feeding, want of work, the coating process and heredity.

Symptoms.—Sometimes the first symptom is swelling of the lower part of the legs, with cracks and watery discharges at the back part of the pastern. At other times, there will be red and tender skin in the hollow of the pastern; drying up of the secretion and consequent cracking; lameness. The cracks bleed upon motion and become ulcerated, giving out a thin, burning discharge which increases the swelling and heat; bottoms of the cracks sloughing and unhealthy; sometimes fever and impaired appetite.

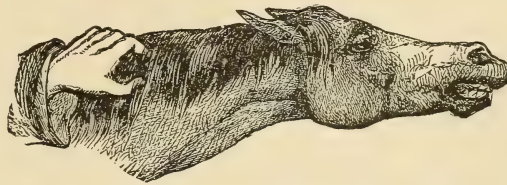
TREATMENT.—Clip the hair from the edges of the crack and apply to the heel a warm turnip or linseed poultice if much fever be present, and give bran-mashes and green food for diet. When the inflammation begins to subside, discontinue poultices and apply morning and evening, with a soft sponge, a lotion of one drachm of liquor arsenicalis and two ounces of

water; before using the lotion, wash the cracks with soap and water and gently dry the heel. In the absence of much inflammation, the disorder not being an outgrowth of constitutional disease, apply morning and evening a liniment of one drachm of liquor arsenicalis to one ounce of glycerine. When the inflammation is not very active, good results may be secured by a dry flannel bandage applied moderately tight around the leg. Give arsenicum three times a day. Put on high-heeled shoes, and give two hours in walking exercise daily. Exercise care during coating.

MANGE.—ITCH.

This is an itching and scaling of the skin from the presence of parasites under the surface. It is caused by a poor and weak condition, with want of cleanliness. It is contagious, though it is seldom transmitted to strong, well-kept horses, and then does not spread among them.

Symptoms.—Itching, soon followed by falling of hair and scaling of skin; small vesicles form on the skin, burst, and discharge a fluid which forms into a scab; this being removed, the microscope detects very small



150. TEST FOR MANGE.

insects. Later, the skin lies in hard folds, especially about the neck, and becomes raw and ulcerated by repeated rubbing; in advanced stages fever appears, with loss of flesh and sometimes dropsical indications. The neck, shoulders, back, quarters and abdomen are the parts most affected. *The attendant may take the itch by contagion.*

TREATMENT.—Give arsenicum night and morning in cases with scabby sores and red, burning ulcers, with hard-crust-ed edges. It is valuable when the horse is in low condition. Mercurius is needed if there be raw sores or pustular formations. To destroy the parasites, use the above internal remedies and in addition put on the affected parts and thoroughly rub in a liniment composed of three ounces of oil of tar and one pint of train oil, first carefully washing the parts with soft soap and warm water, and drying with care. Repeat the process in three or four days. Three ounces of sulphur and a pint of oil make a good ointment. Carbolic acid, one part

to thirty-two of water, is highly recommended; one dressing may be sufficient, and may be washed off in two days. Should these applications fail to destroy the parasites, saturate the parts daily with a lotion of two ounces of liquor arsenicalis and one pint of water. A very desirable remedy is made of one ounce of pure carbolic acid and one pint of glycerine, a little being daily rubbed upon the bare patches, or lightly put on the sores. In extreme cases, the following lotion may be applied, *not less than a week apart*: One half-drachm of corrosive sublimate mixed with two ounces of spirits of wine, then adding one pint of glycerine. Because of its cheapness and efficacy, the tar-liniment first named should be tried before other remedies, unless it be the diluted carbolic acid. Give soft, nutritious food, including green diet.

Use one of these applications in cleansing all harness, brushes and combs used about the horse, as well as all posts, trees, boards or other objects against which the animal has been rubbing, both in the stable and out of doors; boil, for a long time, all blankets that have been used.

LICE.

Lice may be found on horses, especially those of long, shaggy coats and lean condition. They may come from dirt, old straw, fowls roosting about the stall, and other sources, or from contact with another horse.

Symptoms.—The horse bites his quarters and sides, rubs against any object in reach, tearing the skin in patches; lice on the bare patches are seen.

TREATMENT.—Boil one ounce of tobacco in a pint and a half of water down to a pint, strain, add forty grains of white arsenic, and then boil a little again. Wash the parts with the preparation. Another excellent expedient is to rub into the roots of the hair powdered white precipitate, removing it the third day by good brushing, *and keeping the horse dry* while this is on him. Keep the stable thoroughly clean; burn all infected litter and clothing; wash the harness with hot water.

ITCHING OF THE MANE AND TAIL.

This is usually caused by neglecting to keep the roots of these parts clean. It is in many cases cured by washing with strong salt-water. Another method is to wash the parts with soap and water and apply lard and blue ointment in equal parts, meanwhile keeping the horse dry. Though such itching often points to mange or lice, it does not always do so. Its chief injury is in a disfigurement of the mane and tail from the rubbing.

HIDE-BOUND.

Hide-bound is a sticking of the skin to the ribs, either as a symptom of some disease internally, or as a result of absorption of the adipose matter and fat under the skin. Sometimes the abdomen is distended with wind, or is contracted and tucked up.

TREATMENT.—If it results from another disease, that must be removed by the proper treatment. In cases of indigestion, a very common cause, give ten drops of *nux vomica* three times a day. Steep a pint of linseed in boiling water and add it to a bran-mash, giving this every night. If the horse be poor, give soft, nutritious diet, as clover and other green food.

MALLENDERS AND SALLENDERS.

These are unsightly scurfy eruptions on the back of the knee and front of the hock respectively. They are caused by washing the legs and not properly drying, and by bad grooming.

Symptoms.—Cracks or scurf on the back of the knee or bend of the hock; itching; sometimes lameness. Previous to this there might have been an eruption with a fluid oozing out and forming a scab with mingled dirt and pieces of cuticle, sometimes ending in ulcerations, like cracks at the heels.



151. MALLENDERS—BACK OF KNEE.



152. SALLENDERS—IN FRONT OF HOCK.

TREATMENT.—Soften the scurf night and morning with warm water, and dress with a preparation of one drachm of carbolic acid and two ounces of glycerine. Or give arsenicum internally and apply externally a preparation of one drachm of liquor arsenicalis and two ounces of glycerine. Thuja is a valuable internal and external remedy; for external use add one part of the tincture to two of glycerine. A wash made by steeping the leaves of the *arbor vitæ* is also useful and convenient.

RING-WORM.—TETTER.

This is an eruption of the skin which results from low condition; bad food; sudden change of food, even if from bad to good; contagion, the groom himself being thus liable to it.

Symptoms.—White scaly scurf, more often on the neck, shoulders or

quarters, spreading out in a circular form one or two inches in diameter, composed of pimples with raised edges; itching; scales and hair fall; pimples disappear, leaving nothing but scurf and loss of hair. Sometimes however it takes the form of pustules in limited patches, giving out a discharge which mats the hair; a crust then forms that is easily removed; small cavities are underneath, some containing pus.

TREATMENT.—Give bran-mashes at night, and arsenicum night and morning. In the *dry* form, apply daily a preparation of one half-drachm of carbohc acid to one ounce of glycerine. In the *humid* form, remove the scabs and dress the sores daily with a mixture of one drachm of liquor arsenicalis to one ounce of water, giving rhus or arsenicum in a wine glass-ful of water three times daily. Promote the general health.

WARTS.

Warts are excrescences of varying size, spongy and readily bled, or hard and dry, occurring singly on the belly, sheath, and inside of the thigh, or in clusters on the face, nose, ears, and eyelids. They may have a broad base, or stand or hang on a stem. They are probably caused by deranged secretion of the skin.

TREATMENT.—Remove any that are on a stem or small base by tying ligatures firmly around the base and leaving them until the warts fall off; the application of caustics is still better. If the wart be broad and moist, or if large and very “seedy,” and bleeds easily, scrape the surface raw with the thumb nail (if not already raw), moisten the finger, dip it in powdered arsenic, and put a slight layer on the raw surface, leaving it thus. The wart will usually drop off, after one application, in ten to twenty days, never growing again. If clusters of small warts appear on the face and about the eyes, wet the warts three times a day with thuja; if this does not succeed, use rhus in the same way. Sometimes the wart has no attachment to the skin other than a sac which incloses it. In such cases, cut the sac, squeeze out the wart, and the cut will heal at once.

ERYSIPELAS.

This is a spreading painful inflammation which frequently affects the underlying parts, or even the internal organs. It may be communicated by one animal to another. Among its predisposing causes are foul air or food, debility from diseases, as those of the liver and kidneys, absorption of poisonous matters through a sore, as cracked heel in the horse, green buck-wheat as food, sudden suppression of the secretions of the skin, unhealthy

lodgings, proximity to decaying animal and vegetable matter. The exciting causes are local irritations, as from chafing in work, rubbing of harness, corroding medicines on the skin, bites and stings of insects, burns, scalds, dropsy, wounds, open sores exposed to accumulations of rotting manure or other matter.

Symptoms.—The first symptom is usually a fever, followed by loss of appetite; dullness; quickened pulse and breath; hot skin; constipation; scanty, high-colored urine; elevated temperature at the rectum; then spreading, hot, tender, slimy, itching swelling, very often starting from some sore, though not always; the inflammation may extend to the underlying tissues, or may be dropsical in its character; the border of the swelling is abrupt; the skin is tense, pits on pressure, perhaps shows pimples and is more or less red, the shade being deeper on a clear, white skin. After some days either the swelling and redness subside, and the sores dry into scales which drop off and leave a dark-red and tender surface; or cracks appear with sores which have little tendency to heal. In the horse, the head, chest, belly and hind limbs are especially subject to a dropsical swelling.

TREATMENT.—Rhus is one of the best remedies in the treatment of this disorder, especially when blisters form, accompanied by fever and a hot, rapidly-spreading swelling. Arsenicum should be given when cracked heel is the cause, and will be found to be a good general remedy, especially if pus has formed. Apply to the parts warm fomentations of a weak solution of tincture of muriate of ammonia, or of sulphate of zinc, protecting the sore then from cold air. A dry application of zinc and starch is also recommended. Iodized adhesive plaster may also be of service, especially in checking the spread of the swelling. If matter has formed, let it out.

GALLS.

Galls are caused by a badly-fitting saddle or collar; by the harness or girth; by bad riding; by removing a saddle too soon after a ride, before the horse becomes cool.

TREATMENT.—For saddle-galls, with deep bruising of the tissues, apply one part of arnica to nine of water once in four hours, with a soft rag or sponge, keeping the injured surface covered from exposure to the air and insects. If there be soft tumors arising from inflammation, open the swellings, squeeze out the contents, and put in a few drops of arnica tincture, if the cause be friction of the saddle. When the swelling, from neglect or frequent recurrence, becomes hard and the skin thickened and half dead, the sore perhaps being partially separated all around from the healthy skin, the tumor may be cut out and the sore dressed with tincture of calen-

dula, at the same time giving internally six drops of the same, thoroughly mixed with a little water. Equal parts of Venetian turpentine and lard make a good application; and equal parts of mercurial ointment and lard are beneficial. Of the three remedies the first is the best. Should the muscles of the back as well as the skin be injured, causing serous sacs in the skin, foment and apply arnica-lotion. This failing, lay open the sac and dress with calendula-lotion. Use care with the harness and saddle.

WORMS IN THE SKIN.

Worms in the skin are sometimes found in tumors, resulting from the gad-fly depositing its eggs. The tumor may be as large as a pigeon's egg, and more than one may be found. They occur mainly in the back and loins. To remove this trouble, put a few drops of carbolic-acid lotion where the eggs have been deposited, either before or after the hatching.

BITES AND STINGS OF INSECTS.

The irritation resulting from these may be relieved by applying externally arnica-lotion. As a preventive of the biting, rub on the body, especially the flanks, a strong infusion or tea of green elder-leaves.



CHAPTER VII.

THE URINARY AND GENERATIVE ORGANS.

INFLAMMATION OF THE KIDNEYS.

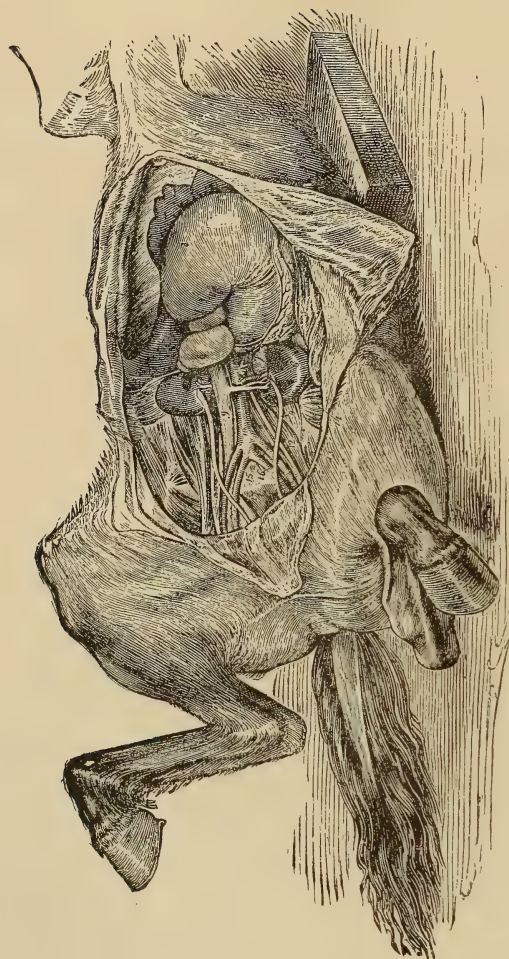
INFLAMMATION of the kidneys is not frequent, and is caused by bad food; kiln-dried oats; mow-burnt hay; exposure to cold and wet; injuries from blows, weights and other sprains; frequent doses of strong medicines to promote the flow of urine, as cantharides, turpentine and nitre; gravel and other diseases.

Symptoms.—Considerable fever; pain, indicated by looking at the loins, and by groans; loins tender; back arched; hind limbs stiff and far apart; horse stands still or moves stiffly and perhaps with lameness; fre-



153. POSITION IN URINARY DISORDERS IN GENERAL.

quent attempts to pass urine, the discharges being dark and scanty, sometimes pussy and bloody. In advanced stages the pulse, at first full, hard and rapid, becomes weak and wiry; breathing quick and short; intense



154. POSITION OF THE URINARY ORGANS RELATIVELY TO OTHER PARTS.

1. Right Lobe of the Liver. 2. Middle Lobe of the Liver. 3. Right Extremity of the Stomach. 4. Left Extremity of the Stomach. 6. Left Kidney. 8. Ureter, a canal which conducts the urine from the Kidneys to the Bladder.

thirst; dry, hot mouth; skin dry; strong-smelling sweat; constipation; still later, exhaustion, indifference, sleepiness, and death.

This may be distinguished from inflammation of the neck of the bladder by the brown or nearly black urine, which is of about the natural color in the latter disease. If the hand be oiled and passed up the rectum, the bladder will be found considerably enlarged if it be inflamed, while it is empty and contracted in the disorder which we are now treating.

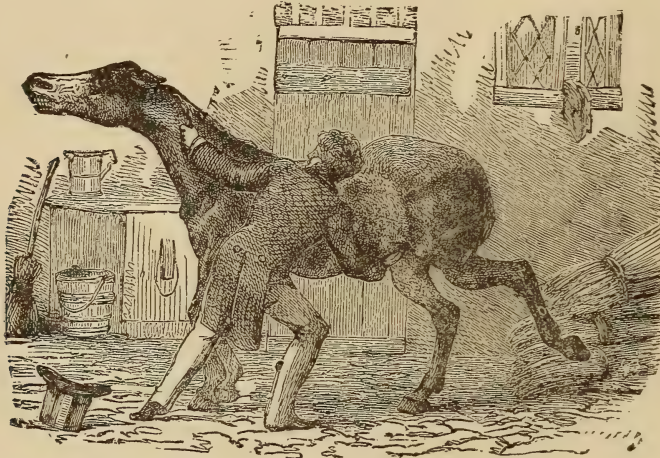
TREATMENT.—In the first stages of fever, indicated by full, rapid pulse, hot, dry mouth and skin, rapid breathing, thirst, scanty urine, and pain in the loins, give aconite. This may be alternated with belladonna if relief be not given, or if there be hot loins, pain about the kidneys, indicated by the horse frequently looking anxiously at them, or if there be a wild, frightened look. Cantharis, *if it has not previously been given*, is beneficial for frequent passages of scanty urine, with difficult straining, and when the urine is tinged with blood. Rhus is demanded when sprains are the cause. This and arnica should also be applied externally. Camphor is useful when cantharis, given as Spanish-fly or otherwise, is the cause. If bad food be the cause, give nux vomica, the symptoms demanding it being unsuccessful efforts to pass urine, colicky pains, looking at the flanks, and constipation. Mercurius corrosivus is one of the best remedies in both acute and chronic cases, and its use is called for when the urine is scanty and passed with frequent urgings and great pain; it may be alternated with aconite or belladonna. A very common but pernicious course is a resort to diuretics, that is, stimulants to the action of the kidneys. These should not be used, for the scantiness of the urine which it is desired to correct is due to engorgement of the kidneys, and the diuretics will aggravate the engorgement. Free perspiration is the best means for freeing the blood of the poisonous matters retained in consequence of the obstruction to the kidneys. Apply warm fomentations to the loins. Give bran-mashes and scalded linseed for food. Mix the drinking-water with linseed-tea, enough to make it glutinous without being distasteful to the animal.

INFLAMMATION OF THE BLADDER.

Inflammation of the bladder sometimes attends or follows inflammation of the kidneys, or it may occur independently, caused by exposure to damp and cold; by injuries; by stone (see page 637); by giving nitre, Spanish-fly, or other strong medicines for the urinary organs.

Symptoms.—Restlessness; mouth, throat and alimentary canal irritated and inflamed; difficult swallowing; hind legs tremble; testes drawn up; sexual excitement; mucous and bloody dung; rapid pulse; frequent

attempts to pass urine are unfruitful, or only a few drops pass with pain and difficulty, followed by a temporary cessation of pain; urine sometimes clear, at other times mixed with mucous or bloody matter, burning and irritating; the parts around the bladder are hot and tender, and this organ is found very painful when examined through the rectum. If the disease is not arrested, the bladder fills and swells, its neck opens and urine dribbles away; prostration follows, with sweats, paralysis of the hind quarters, and finally death.



155. TEST FOR INFLAMMATION OF THE BLADDER.

TREATMENT.—Give aconite for symptoms of fever; frequent, fruitless, painful attempts to pass urine; pain on pressure of the parts near the bladder; urine scanty, muddy, or mixed with blood. Cantharis is demanded by distended bladder and tenderness of adjacent parts; mattery and mucous urine passed in drops, the pain increasing during such passages. Should cantharis fail, give nux vomica. Injections of anodynes into the bladder, by skillful hands, are very useful for relieving the inflammation, and the following will be especially valuable: To one pint of gum-arabic water add one drachm of fluid hydrastia and one drachm of tincture of opium; inject this into the bladder luke-warm. In the general care, give freely of linseed or slippery-elm tea, or a strong solution of gum-arabic. Scalded linseed in bran-mashes is the best diet. Guard against the exciting causes.

SPASM OF THE NECK OF THE BLADDER.

This occurs as the result of prolonged retention of urine in horses that are worked or driven to excess, and as a consequence of chill when the

animal is heated, or as an attendant of colic and irritation of the neck of the bladder. It is most common in males.

Symptoms.—Frequent efforts to urinate, the urine passing in a few drops or dribbling away with some pain and straining; tenderness of the back; the hand passed up the rectum feels the distended bladder, the neck being tense and firm, not distended as in stone or gravel. If the bladder is not relieved of the urine, it is liable to burst and be followed by inflammation of the peritoneum (peritonitis), an issue which is however less common in the horse than in the ox and sheep.

TREATMENT.—The treatment consists in the use of antispasmodics, either in the rectum or mouth, chloral hydrate, belladonna, hyoscyamus and tobacco being the best. These may be injected into the rectum or given internally, or both. If these measures fail to relieve, a suitable catheter should be used by skillful hands to draw off the urine. Sometimes the spreading of fresh bedding under the horse will promote the flow of urine.

EVERSION OR FALLING OF THE BLADDER.

This can occur only in the female, and is the result of severe straining during irritation of the bladder. It is most liable to ensue from over-distension, difficult parturition, or paralysis.

Symptoms.—The animal strains violently; between the lips of the vulva is seen a red, rounded mass, upon whose surface, near the neck, may be seen the mouths of two canals which convey the urine from the bladder, and from these mouths the urine escapes in drops.

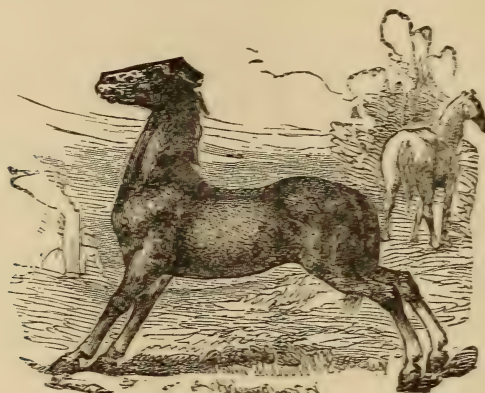
TREATMENT.—Return the bladder to its place as follows: Wash the protruding mass in warm water, and oil it well; then oil the hands, press in the center of the mass, gently pushing it upward. If the neck of the bladder is swollen and inflamed, the greater care should be taken to avoid injury or rupture in its coats. If great straining continues after this operation and threatens a recurrence, a surgeon should apply a truss or other mechanical appliance to retain the bladder firmly in its place.

ALBUMINURIA.—BRIGHT'S DISEASE.

This consists in an inflammation of the kidneys, attended with shedding of the coat and finally structural change of the kidneys. It may be either acute or chronic. The urine may contain albumen as a result of inflammatory disorders, and yet Bright's Disease not be present. The latter is always attended with albumen, but all cases of the presence of albumen are not Bright's Disease.

Symptoms.—The urine is thick, ropy, and contains parts of the lining of the urinary tubes which the microscope will detect; when it is boiled, or subjected to the action of dilute nitric acid, it coagulates into whitish flakes which settle at the bottom of a test-tube (see page 216). The animal is awkward behind in gait, with indisposition to lie down, and with more or less tenderness over the loins. The disease is usually fatal, the animal dying with dropsy or uræmic poisoning, though prompt and efficient treatment has cured some cases.

TREATMENT.—Diuretics, that is, means of promoting increased secretion and passage of urine, should not be used, but rather such expedients, both medicinal and general, as will relieve the kidneys of the performance



156. A HORSE WITH ALBUMINOUS URINE.

of their usual functions, and reduce the inflammation. Among internal remedies belladonna and mercurius corrosivus are the best; they should be used in alternation and persisted in until the kidneys are relieved and the flow of urine becomes free, they being particularly demanded if the urine is bloody. Warm fomentations and mustard should be applied about the loins. Keep the pores of the skin open by studious cleanliness and free perspiration, but guard against draughts and other influences likely to induce colds. Restrict the diet to oatmeal gruels and the like, giving bran-mashes to keep the bowels open. See "Urinary System," page 543.

DIABETES.—EXCESSIVE URINE.

This causes great prostration, and may lead to glanders. If the urine be clear, containing no sugar, the disorder is known as *diabetes insipidus*. If the urine is sugary, as is rarely the case, the disease is called *diabetes*

mellitus. The chief causes are musty or mow-burnt hay, kiln-dried oats, bran, and other dry or bad food; impure water; indigestion; chronic disease of the kidneys; strangles; the use of "condition balls," turpentine, nitre, and the much-advertised specifics for horses; excessive drinking; certain plants in the pasture; cold and wet. Increased urine may result from nervous disorders, from change of food, and other causes, but should this be only temporary, no attention need be paid to it.

Symptoms.—Excessive thirst; impaired, capricious or depraved appetite; dry and clammy mouth; white and furred tongue; offensive breath; dry skin and rough, staring coat; deranged digestion; constipation; urine clear, or somewhat milky, and passed in very great quantities; the horse is dull, weak, out of condition, and sweats easily; glanders may ensue and prove fatal, or the horse may die from the diabetes any time within a year.

Treatment.—Phosphoric acid should be given for profuse colorless or milky urine; great thirst; sweats and loss of flesh ensuing from light exercise. Give arsenicum for weakness and emaciation; dry mouth; excessive thirst; sugary urine. Nux vomica is demanded for depraved appetite; poor digestion; profuse, frequent, limpid urine; dung covered with mucus. If the urine be frequent and copious, with red, sand-like sediment, give lycopodium. If the urine be copious, more so at night, muddy and offensive, or if it be brown-red, or if blood comes from the bladder, give mercurius. Stop at once the use of any food that may have caused the disorder, especially avoiding musty or very dry articles.

SCANTY URINE.—RETENTION OF URINE.

These disorders may result from inflammation of some urinary organ; from some obstruction forming in an organ; from excessive dung accumulated in the rectum; from falling of the womb; from diminished secretion, owing to the perspiration incident to hot weather or hard work.

Treatment.—If the cause be some other disease, that must be treated. Should the horse be otherwise in apparently good health aside from decreased urination, give bryonia or arsenicum three times a day. Should the urine be retained in the bladder, which may be known by passing the hand up the rectum to the bladder, it should be drawn off with a catheter in skillful hands, not by one who lacks experience.

STONE.—GRAVEL.

This is a deposit of solid earthy matter in the urinary organs, sometimes only sandy and gritty, sometimes in the form of a stone, which may

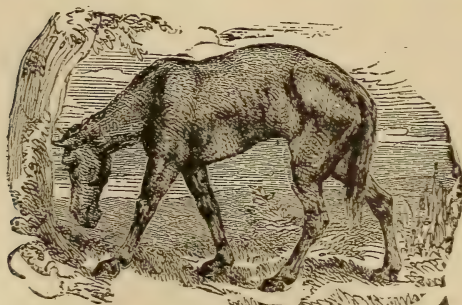
be small, or, if in the bladder, may weigh several pounds. Among its most probable causes are earthy particles in the food and water, as grass grown on limy soils or those supplied with phosphates as fertilizers; water charged with salts of lime and magnesia; dry feeding; scanty urine from any cause; perhaps hard water.

Symptoms.—Stone in the *kidneys* may be suspected, but not positively known, from tenderness of the loins, colicky pains, discharge of sand and blood with the urine. Stone in the *bladder* will be indicated by an awkward, straggling gait, with hind legs apart; frequent efforts at urination resulting in scanty and difficult discharges; the urine sometimes comes out suddenly, or may be as suddenly stopped, and sometimes it dribbles out and makes the legs and thighs sore; colicky pains; occasional discharges of blood and thick sediment. The stone, if large, may be felt by passing the hand up the rectum to the bladder. Stones in the canal leading from the bladder to the pelvis will cause colicky pains and stoppage of urine, with the general symptoms of inflammation of the kidneys. The foreskin may be affected, causing distress in urination or actual stoppage of urine.

TREATMENT.—The remedies laid down for Inflammation of the Bladder should be adopted to relieve the disorder, though it can be cured only by a surgeon who will break or cut the stones, when of sufficient size. Give soft water for drinking, with linseed-tea or decoctions of mucilage freely administered. Keep the organs clean, and if sores are found, wash with a lotion of calendula, one part to eight of water.

BLOODY URINE.

Bloody urine is not uncommon. It may be caused by some of the urinary diseases before named; blows; strains from heavy loads, jumping and other causes; the use of Spanish-fly; foaling; the eating of poisonous plants, or the twigs of young trees; very rank herbage; swampy pasture; damp weather; occasionally hot days and cold, damp nights; anthrax and other diseases.



157. A HORSE SUFFERING FROM BLOODY URINE.

Symptoms.—Urine red with blood, or has clots of blood, the latter part of a discharge being more noticeably bloody than the

first. If the kidneys be affected, the horse stands in a singular posture; if the bladder be involved, the gait is stiff, and more blood passes than in

kidney-complications. If injuries be the cause, the loins are painful, and clots of blood pass, with or without urine. If vegetable poison be the cause, the feverish symptoms of inflammation of the kidneys are present, with scanty, reddish urine, followed by painful, bloody, burning urine.

TREATMENT.—If the cause be some other disorder, treat that disorder as directed under the proper section. If a blow about the loins or a strain be the cause, and blood is mixed with the urine, give arnica internally and apply externally. Throw cold water over the loins and inject it up the rectum. Rest should be given. Give aconite for feverish symptoms and strong urine. Cantharis is needed for forcible, painful efforts to urinate, with blood or bloody urine passed. Turpentine is desirable for clotted blood passing from the bladder, and is useful if cantharis fails. Give soft food; also linseed-tea freely. If hurtful plants be the cause, remove the horse to another locality.

FOUL.

Foul is a term applied to horses that experience great trouble in urinating, chiefly in dry, hot, dusty weather. It is caused by a clogging of the sheath of the penis with dirt and urine.

Symptoms.—The horse evinces much uneasiness; shifts the weight from one side to the other; stands with the hind legs apart; makes frequent efforts to urinate, but stops suddenly as if suffering from acute and darting pains. The urine dribbles away, and is more or less foul-looking and offensive; the sheath is swollen; the region of the bladder is distended from the retention of urine, and is sensitive to the touch.

TREATMENT.—The only cure is in a thorough cleansing of the sheath with the hand, warm water and a syringe.

GONORRHOEA.

This sometimes occurs in stallions and mares after sexual intercourse, and sometimes is infectious.

Symptoms.—In stallions, swelling and ulcers about the penis; swelling of the testicles and glands in the loins. In mares, swelling and itching in the vulva and vagina, where vesicles form, followed by ulcers. Either sex shows a stiff walk; loss of flesh and vivacity; death from putrid fever or possibly apoplexy.

TREATMENT.—For acute and violent inflammation give five or six drops of aconite once in three or four hours. After the violence of the inflammation has been reduced with aconite, give cantharis in its stead.

After the action of these two remedies mercurius will usually complete the cure. After pus has begun to discharge, a wash of permanganate of potassa may be injected into the urethra. Mix a half-drachm of permanganate of potassa in a pint of rain or distilled water, and use once or twice a day. Keep the parts clean and free from any obstruction.

ABORTION.

Abortion is not common among mares. It is caused by over-exertion of any kind; strains; blows; falls; very poor and insufficient or very stimulating food; inflammation of the bowels. It occasionally appears to be communicated by sympathy, similarly to an epidemic.

Symptoms.—The approach is marked by loss of vivacity and appetite; hollow flanks; sinking of the abdominal enlargement; gradual lessening or entire loss of the foal's movements; the breathing grows obstructed; yellowish matter passes from the vagina; straining; expulsion of the foal.

Treatment.—When abortion is threatened from fright, strain or other cause, opium should be given, and the animal be kept at complete rest. This may be followed by viburnum, prunifolium, caulophyllum, or cimicifuga, in teaspoonful doses of the tincture every half-hour, hour, or two hours, until all danger is passed. When abortion has taken place and there is great feebleness, with a copious flow of blood and violent straining, ergot should be given. Cinchona is good for restoring the strength after an abortion. Sabina is needed in case of a discharge of bright-colored or coagulated blood before or during the abortion. Tincture of camphor has been successful in preventing abortion when the sexual instinct has been morbidly susceptible, and when the spasmodic action of the womb has appeared to be the direct cause. A due regard to suitable diet and pasturage, proper housing, bedding, ventilation, cleanliness and exercise will go far in preventing the misfortune. If an animal has aborted, she should not be put to the male until after several seasons of heat. Keep mares that are with foal away from slaughter-houses and decomposing animal matter in general. Shut away from the smell of the abortion-discharge all animals that are pregnant, whether mares or not, as it renders them liable to abortion.

DIFFICULT FOALING OR PARTURITION.

The symptoms preceding parturition are quick breathing, swelling of the udder, with a sudden gush of milk, dropping of the belly, external swelling of the bearing and adjacent parts, with a shiny, glossy-red or yellowish discharge from the bearing. If these be slow in progress to labor-

pains, and the pains and throes be long and violent, or the throes continue after the expulsion of the after-birth, with great discharge of blood, medicinal treatment is needed. So too, if the labor has been assisted, and if any laceration of the parts has taken place, that must be treated.

TREATMENT.—When the pains are too light or subside too much by spells, give ten drops of pulsatilla every two or three hours. If they are attended with convulsive movements, give ergot, especially if they cease altogether before delivery. Nature has made the best provision for this function, and the least interference the better, either in medicine or otherwise.

FLOODING AFTER DELIVERY.

After parturition flooding may ensue, either from lack of a sufficiently rapid contraction of the womb, or from injuries incurred during a delivery, especially if it has been difficult, prolonged, or has been assisted by an attendant.

TREATMENT.—Put a bandage tightly around the belly; pour cold water on the loins and inject it into the vagina and rectum. Use arnica externally; also internally in alternation with ergot or sabina. Quinine will assist in recovering strength after the bleeding. Keep the mare quiet, in a cool, well-ventilated stable, free from draughts.

REMOVAL OF THE AFTER-BIRTH.

If this does not come away immediately after delivery, give a few doses of ergot. The introduction of the hand or injection of warm water is not advisable, except in extraordinary cases. If the mare continues to strain when the after-birth has been removed, give a dose of opium. As a preventive of the retention of the after-birth, animals in poor condition should be fed warm, sloppy food for ten days previous to parturition.

INVERSION OF THE WOMB OR VAGINA.

If the womb should protrude immediately after the expulsion of the foal, gently place it back, temporarily bind the parts, and give five drops of arnica every three hours. Keep the animal perfectly quiet and give only light and nourishing food for two or three days. The vagina may protrude in a similar way, in old mares or in fillies. It may be caused by general weakness, or by standing in a stall that is too low behind. Treat as for inversion of the womb, keeping the animal's hind feet higher than usual, and building up the system with the best of food.

INFLAMMATION OF THE UDDER.

This disorder may result in hardening, ulceration or mortification of the udder, and arises from blows on the organ, lying on cold, hard or sharp objects, cold air, contracting of colds in any way, too hearty food, indigestion, milk remaining in the bag too long, some articles of food.

Symptoms.—General fever; udder hot, swollen, hard and tender in some part. Then the symptoms may subside and the natural state ensue; or the swelling may soften and blood and matter be mixed with the milk; the udder, if the trouble continues, may all be hard, permanently useless, or be full of ulcers; or mortification may set in and part of the organ be lost. During the progress of the disorder there may be shivering; strong, quick pulse; rapid breath; constipation; scanty or suppressed urine.

TREATMENT.—Give aconite for fever, in the earlier stages. Belladonna is needed if the teat or udder be hot, red, swollen and tender, and the milk stopped. Phytolacca is very beneficial, especially if used in the early stages; it will often check the disease, avert ulceration, and restore the milk. Give five drops in a little meal every three hours, and bathe the udder with a lotion made of one ounce of the tincture to a pint of warm soft water. Mercurius removes the hardness which follows the formation of pus, and also acts well in the beginning as a preventive of suppuration. Silicea is desirable if the healing process is slow and ulcers remain. Prevention is the best treatment and may be effected by relieving the gland of the milk. To do this, apply to the udder camphorated spirits, weak iodine, or phytolacca-ointment, rubbing long and thoroughly, and draw out the milk three times a day. A hungry calf may be used to draw the milk.

INFLAMMATION OF THE VAGINA.

This may arise during “heat,” or from blows, copulation, or parturition.

Symptoms.—If this occurs during heat, there is a discharge from the opening, of a grayish-white, then yellowish-white color. In other forms, the discharge is thin, burning, and often causes much straining. In severe cases, general fever-symptoms ensue.

TREATMENT.—Keep the parts clean and inject warm water several times a day. If the discharge continues after inflammation has subsided, inject hydrastis-lotion, or a lotion of permanganate of potassa, as in gonorrhœa. For fever-symptoms give aconite; for straining, cantharis; for abscesses or ulcers, mercurius. Injections should be blood-warm, for cold ones are liable to aggravate the trouble.

INFLAMMATION OF THE URETHRA.

Inflammation of the urethra may result from a catarrhal condition of the urinary canal; from the administration of cantharides or croton, or (in stallions) from frequent copulation. Its symptoms are mattery discharge from the canal; frequent, painful and difficult urination; perhaps swelling and ulceration. Treat as for gonorrhœa, which was noticed above.

CONFINED PENIS.

Inability to protrude this organ may result from internal warts or abscesses; from swelling of the sheath; from kicks or blows. The urine may collect in the folds of the skin and cause swelling and distress, known as foul.

TREATMENT.—Remove warts by tying ligatures around them and leaving them until they fall off. Abscesses should be fomented with warm water. If blows or kicks be the cause, give arnica internally and externally. In other cases, inject two or three times a day between the penis and sheath warm water or hydrastis-lotion. If foul is the cause, treat as directed under that head in one of the preceding articles.

PROTRUSION OF THE PENIS.

Protrusion of the penis, with inability to draw it within the sheath, may be due to swelling of the penis after castration, to debility or paralysis of the organ, the latter being the more usual cause in old geldings, though it may attend any general debility of the system.

TREATMENT.—If injuries be the cause, give arnica externally and internally. For feverish symptoms and inflammation aconite and mercurius are needed. For debilitated organ give quinine and nux vomica. Cold water injected into the sheath may give relief.

CASTRATION.

This is not the place to give the different methods of performing castration, as that is left to the operator, as well as the question as to the age at which it should take place. But it may be generally remarked that if the animal's head, neck and shoulders are well developed, it may take place earlier than under different conditions. Delicate colts should have nourishing food and outdoor exercise for several days previous to the operation, though no preparation is necessary for the healthy sucking colt. If he has been weaned, he should not have his usual bulk of food and water for

several days previous, but should not be starved. Horses that have been in training or have been high-fed should rest several weeks previously, their food being gradually reduced. The disorders arising from castration should be treated by the veterinary surgeon, though the following directions can be profitably followed by the general reader:

TREATMENT.—Should the bleeding be considerable, bathe the part freely in extract of hamamelis every half-hour until the bleeding stops, then three times a day until the parts are wholly healed. If the sheath be swollen, it will usually resume its normal condition without treatment; but if it should not, and the parts become inflamed and tender, with signs of general fever, give aconite every few hours. If much laceration has taken place, bathe the parts three times daily with a lotion of a tablespoonful of tincture of arnica to a pint of water. If lock-jaw, fistula or peritonitis result from castration, use the treatment for these as given before.



CHAPTER VIII.

THE EYE AND EAR.

SIMPLE INFLAMMATION OF THE EYE.

THIS is the most common disease of the eye to which the horse is subject, and may affect merely the outer lining, or may involve the whole structure. Its causes are catarrh, bad food, damp or poorly-ventilated stables, injuries from a stick or whip, the bite of another horse, hay-seed, dust, in-growing eyelash, or other mechanical agencies.

Symptoms.—The horse, in apparent health before, has slight symptoms of fever; the lids of one eye or both swollen or half-closed; scalding tears run down the face and irritate the skin; great pain caused by the light, and consequent reluctance to open the eyes. Later, a gummy, thickish, mucous secretion at the corners glues the lids together; the membrane covering the balls becomes red and covered with a network of fine blood-vessels; about the third day the transparent front part of the ball grows dim and muddy, sometimes in spots, sometimes the whole surface, seemingly covered with a bluish-white film; the disease continuing, the transparent front of the eye is seriously affected, and the whole eye suffers. In acute cases considerable fever-symptoms appear.

TREATMENT.—One of the best remedies is aconite, which should be given at the beginning when the membrane attached to the eyeball is blood-shot, the eyes are watery, the lids nearly closed, and particularly if feverishness be present. When the inflammation has been reduced by aconite and the case is yet marked by copious and scalding tears, sensitiveness to the light, swollen and closed eyelids, red membrane of the eye, and quickened pulse, belladonna should be given, alone, or in alternation with aconite. Mercurius corrosivus is needed when the secretion in the corners glues the lids, and when the transparent front of the ball becomes dim or cloudy. Euphrasia is often useful for symptoms which seem to call for belladonna and yet have not been removed by its use, or if after the use of the same for several days the transparent front is still dim and cloudy. The euphrasia may also be used as a wash.

In the various inflammations and catarrhal affections of the eyes local applications are of great value, though caution is needed in their use, especially



158. METHOD OF PROTECTING THE EYES AND APPLYING LOTIONS.

in that of nitrate of silver or sugar of lead. Some cases may require these medicines, but simpler articles will usually answer all necessities, and are attended with less danger. When the eye is inflamed and gives out a mucous discharge, pulverized sugar or salt, blown into it through a quill once or twice a day, will often give prompt relief. A wash made of one part of fluid hydrastia and four of water is excellent. In the general care, examine the eye to discover hay, dirt, seeds, and other foreign matter which adheres to the upper eyelid, and is detected by turning the lid back over the little finger. If a portion of the front part or of the membrane of the eye has been removed by a blow, a drop or two of castor-oil or glycerine may be put upon the wound. Keep the

light subdued so as not to pain the eye, guarding against cold and impure air. Many good horses are reduced in value by neglect of seeds or grit in the eye, however trivial it may seem.

PERIODIC INFLAMMATION.—MOON-BLINDNESS.

The latter of these names is used because the periodic attacks are by some supposed to occur with the changes of the moon. This disease is an inflammation of the entire ball of the eye, without any apparent cause externally, and if neglected is often incurable and ends in total blindness. It abates, recurs, and may shift back and forth from one eye the other. It is often inherited, though it may be undeveloped in one generation and reappear in the next. In these cases it may be promoted, in others it is caused, by the impure air of close, dirty, dark stables; poor food; cold or wet; violent exertion, as in running; frequent sudden transitions from a dark stable to glaring sunlight; undue supply of blood in the system; congestion affecting the head, caused perhaps by pressure of a collar which prevents a flow of the blood from the head; changes from cold to warm stables; also from pasture to high feeding and heavy work; foul litter, which is even worse than a glaring light; teething; simple inflammation of the eye may cause it. Damp soils, marshy pasture, and excessive moisture in the atmosphere are predisposing causes, especially in horses that are subject to the disease by heredity. Horses that have soft, lax, flabby muscles, thin skin, flat feet, and that lack energy in work, are predisposed to it; likewise those

that have small sunken eyes ("pig-eyes"). Harness-horses are more liable to it than saddle-horses, and young ones more than the older.

Symptoms.—Flow of tears; lining attached to the ball is red; in the morning the eye is almost closed and full of tears; eyelids swollen; pain from the light; great reluctance to allow the eye to be opened; corner of the eye red; the transparent part in front grows muddy and opaque; pupil very small; iris dim, speckled with white, covered with lymph, pus or blood; hot, dry mouth and quick pulse; constipation; scanty urine; on the third to the sixth day congested blood-vessels run into the edges of the transparent portion; later still this naturally transparent portion passes from a yellowish-white to a greenish or brownish; sometimes the crystalline lens becomes opaque and cataracts form; the iris may be affected with inflammation in frequent attacks and great irritability, though blindness may not soon intervene; occasionally the interior of the eye becomes yellow and muddy, the eye then shrinking away. In favorable cases the symptoms begin to disappear from the fourth to the tenth day, the eye becoming healthy. An attack may last from four days to six weeks, each one being shorter than the preceding. Apparent recovery is often interrupted by a relapse or change of the attack to the other eye. Between attacks the eye may appear well, but it is not; the eyelids may form nearly or quite a right angle; the iris may remain contracted and lose its luster. An attack will recur upon a return to the usual food, upon exposure to wind, cold and rain, or upon a return to a dirty or badly-ventilated stable. Traces will almost invariably remain after a so-called cure; hence the importance of critically examining the eye before purchasing.

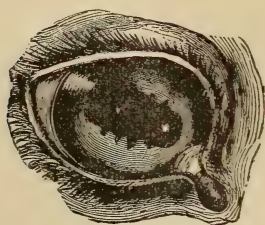
TREATMENT.—Aconite should be given in alternation with belladonna every three or four hours at the beginning of the disease if fever is present, tears abundant, eyelids swollen, and the eye blood-shot. Continue the belladonna after the subsidence of the fever-symptoms which demand aconite, if the membrane of the eye remains red, tears abundant, and local inflammation stubborn. Throughout the whole attack, until a cure is effected, apply to the eye a lotion of belladonna, two grains of the extract to one ounce of water; or bind on the eye a cloth soaked in the same. Euphrasia has effected speedy cures, used in the same manner as a wash, and given internally. Mercurius corrosivus should be alternated with belladonna when the eye is brownish or whitish, and as long as the humors are dim or the naturally transparent part is opaque. When there is a low state of the system, with a weakened constitution, and when recurrence is suspected, give arsenicum. Some cases require a general tonic treatment, and nux vomica, iron, ginger or Peruvian bark will be found useful. Surgical measures are sometimes necessary, especially for inflammation and hardening

of the iris. In the way of general care, keep the stable clean, well drained and ventilated, and exclude the light. Give good but not stimulating food. Since recovery is often effected within a very short time after the removal of the wolf-teeth it has been supposed that that operation is the cause of the cure, but it has no such virtue or connection. Owing to the hereditary tendency of this form of inflammation care should be taken in the breeding to avoid all animals that are afflicted with the disorder.

CATARACT.

An opaque body, white, gray or yellow, fills the pupil, shutting out the whole or a part of the vision. The lens alone is usually affected, though sometimes the enveloping sac is also involved. One eye or both may be affected, generally both, in old horses, in which blindness is usually caused, growing more confirmed as age advances. If the disorder is caused by an injury to one eye, the other usually continues sound. The cataract can be detected by bringing the horse to the light and looking into the eye. The causes are repeated attacks of inflammation; blows or wounds; imperfect nutrition, especially in old horses.

Symptoms.—In a good light, in place of a clear, transparent pupil, may be seen a few white, gray or yellow specks, nearly round, with irregular edges; or there may be a mass of dull-white matter, half-transparent and mottled. The cataract may be in the center of the lens and scarcely



159. PARTIAL CATARACT.



160. COMPLETE CATARACT.

visible. White streaks may diverge from the center, especially in old horses. The lens becomes more convex than before, sometimes hidden by a yellowish substance which fills the pupil (being then called false cataract). In confirmed cases the cataract may be seen at a distance; in recent cases it may be very obscure, when its discovery may be facilitated by enlarging the pupil by applying atropin to it (a solution of one grain to half an ounce of water). Besides the appearance of the cataract, its presence may be suspected from the horse showing an impaired sight, being timid, alarmed

at objects familiar before, shying at strange vehicles, looking suspiciously at whatever he meets; and if he sees better in the evening or in a mild light than in the sunshine.

A whitish-gray speck, or more than one, may form upon the lens of the eye or its enveloping sac, without any apparent previous inflammation, or after an injury from the removal of a piece of the front part of the eye. These are known as "false cataracts." They may disappear without treatment, though cannabis is a valuable aid.

TREATMENT.—When cataract is suspected, sulphur and cannabis may be given to ward it off. When it is confirmed, it can not be cured in the horse, though the use of phosphorated oil has been followed by good results. Mix two grains of phosphorus in one ounce of almond oil and put a drop into the eye once a day for several months. In man it has been cured by removing the lens and using glasses instead, but this does not wholly restore the sight, and imperfect vision from removal of the natural lens will cause more alarm and nervousness in the horse than an inability to see an object at all. Cataract that is threatened by Moon-Blindness may be prevented by a proper use of the expedients named for that disorder.

OBSCURED VISION.—AMAUROSIS.

This is a disease of the optic nerve, or the adjacent part of the brain, causing partial or total blindness. Its causes are excess of light; a blow on the head; injury to the eyeball; tumor pressing against the brain or optic nerve; apoplexy; bleeding from castration; stomach staggers; pregnancy.

Symptoms.—These are usually obscure, and generally appear suddenly; the horse is cautious in his movements; steps high; stumbles or runs against any object in his way; throws up his head; moves his ears backward and forward, as if to catch any sound to guide him. On careful examination the eye stares; sometimes has a glassy appearance; pupil unnaturally large, and round instead of oblong, contracting slowly, and not at all in later stages; the iris shrinks to a small band around the pupil. An unnaturally large, round pupil should create suspicion, and the horse should be taken to the light and the lids drawn shut for some minutes, then suddenly opened. If the pupil does not readily contract from the glaring light, the presence of the disease is at once known.

TREATMENT.—Treatment is usually unavailing. If stomach staggers or other disease be the cause, that disease should be treated. Since the disorder is due to nervous affection, remedies which act on the nerves will be useful in some cases. Strychnia, nitrate of silver, or a blister on the cheek or behind the ears may be used with benefit.

PTERYGIUM.

Pterygium is a thickening of the tissue forming the membrane that joins the eyeballs and lids, and usually extends from the inner corner toward the transparent front part. It is not uncommon among horses that are exposed to the weather and dusty roads during long journeys. It is caused by heat, dust and wind, as a rule.

TREATMENT.—For inflammation with formation of pus or pus-like tears, give conium or euphrasia. One-tenth of a grain of nitrate of silver ground with sugar may be attended with the best results, but it should be continued for some time. Nitrate of silver is not to be applied as a caustic. To prevent the occurrence of pterygium, gently wash the eyes with cold water after a long journey on dusty roads, first letting the horse cool.

WORM IN THE EYE.

Small worms, nearly an inch long, cylindrical, half-transparent, in size and color corresponding to white sewing-thread, are sometimes found in the horse's eye. The cause is not certainly known.

Symptoms.—Deep-seated inflammation, usually in one eye only; the membrane joining the ball and lids is very much inflamed and tinged with blood; the transparent front of the eye becomes cloudy and obscured; closed eyelids; pain from the light. The worm, on careful examination, may be seen floating in the aqueous humor, and though it may not occasion acute pain, it will destroy the eye if allowed to remain many days.

TREATMENT.—A veterinary surgeon should puncture the cornea just below the center with a lancet or trocar. The aqueous humor escapes, and usually the worm with it. The humor will collect by the next day, when the operation should be repeated if the first attempt has not been successful.

POLYPUS IN THE EYE.

Occasionally small polypous excrescences grow on the ball or lids, sometimes resulting from a slight accidental breaking of the membrane, sometimes spontaneously. Similar growths may appear on the transparent front portion of the eye from like causes.

TREATMENT.—The growths should be removed with a delicate pair of scissors and the parts from which they are cut be then touched with some caustic. Any resulting fever may be treated for a short time with aconite and belladonna in alternation. Use mild washes, as in Simple Inflammation of the Eyes, which was previously considered.

ULCERATION AND THICKENING OF THE EYELIDS.

Ulceration of the margins of the eyelids should be treated externally with causticum, putting five drops of the tincture in an ounce of water and applying from time to time until the ulcers disappear. An ointment made of two grains of red oxide of mercury and one drachm of vaseline is excellent.

Thickening of the Eyelids may be treated by giving internally calcaria carbonica or silica. If it is due to granulations on the inside of the lid, apply with a camel's-hair brush a lotion made of one-half drachm of tannic acid and one ounce of glycerine, using it once a day until a cure is effected.

WARTS AND CALLOUS FORMATIONS.

When such formations appear on the eyelids they should be treated with nitric acid, mixing ten drops in an ounce of water and applying night and morning. The mercury-ointment mentioned for Ulceration of the Eyelids is also good. It may be necessary to remove them with a knife or caustic.

PREVENTION OF BLINDNESS.

Young horses are specially subject to blindness as a result of hard driving or work, and one eye or both may be afflicted. Old horses are similarly affected, but not so frequently. When blindness is feared from such causes, danger may be averted by putting six drops of Fowler's Solution of arsenic on a little sugar or meal, and giving two or three times a day. Give easily digested food and perfect rest. If the over-exertion has been continued some time, it may be too late to prevent the blindness; but in such cases the above remedy may be given in the morning, and a like dose of nux vomica in the evening for a considerable time.

THE EAR.

The ear of the horse is subject to but few diseases so far as we know. The external ear may become inflamed as the result of a blow, and be attended with an abscess which causes pain, and which it may be necessary to open. When the ear has become so injured, give arnica internally and apply it externally.

Deafness is not very common, and little can be said of its specific causes, symptoms or location. Hence remedies can not be named here.

CHAPTER IX.

THE EXTREMITIES.

FORMATION OF JOINTS.

JOINTS are formed of bones which fit each other on uneven surfaces, the cavities and elevations mutually corresponding, with an intervening smooth, elastic substance, called *cartilage*, which prevents friction of the surfaces, and relieves the jar that would otherwise occur from walking on hard roads. This cartilage is covered with a fine "synovial" membrane which secretes an albuminous and oily fluid that acts as oil to prevent friction. Strong flexible substances, fibrous in texture, called ligaments, are the chief bonds to hold the parts of the joints together. Some joints are further strengthened with tendons and muscles. Small closed sacs, called "*bursæ mucosæ*," situated between the surfaces of the joints, secrete a fluid similar to that furnished by the synovial membrane named above, to which membrane they are similar in structure. •

SYNOVITIS.

Synovitis is an inflammation of the synovial membranes. The inflamed membranes do not exceed a certain size, do not burst, and do not become well without treatment, but may remain in the same condition for years. It affects the knee, fetlock (then called "wind galls," which see), but generally the hock (then called "bog spavin" and "thorough-pin," which see). Among its causes are exposure to cold and heat; sprains; friction of joints from quick work on hard roads; rheumatic fever.

Symptoms.—Lameness immediately followed by swelling of some joints (not of the surrounding fibrous texture, as in rheumatism); a fluid exudes from the joint, at first usually serous, without the marked fever which attends the beginning of muscular rheumatism; later, lymph escapes and the joint is permanently enlarged, or less frequently the joint becomes stiff and immobile, baffling all treatment.

TREATMENT.—Aconite is the most effectual remedy, both internally

and externally, to reduce inflammation and prevent effusions from the joint, or any structural damage to the joint. Continue it as long as fever-symptoms or local pains remain. After the second or third day the aconite will probably have reduced the active symptoms, leaving the swelling of the joints and slight lameness; in this case give bryonia. Bathe the affected joints three times a day, a half-hour each time, with warm water; then apply to them, when they are dry, one-half ounce of arnica in six ounces of water, well rubbed in. It is said by good authority that *veratrum viride* is superior to this, applied with a brush five or six times a day to the joints.

BOG SPAVIN AND THOROUGH-PIN.

Bog Spavin is a soft, elastic swelling on the *front of the interior part* of the upper hock-joint, where the ligaments lie far apart. It is not attended with the acute inflammation which marks synovitis. It may be constitutional, but is usually caused by over-work in traveling or in the harness, especially in young horses, which causes friction of the joints and the effort of nature to supply relief from an increase of the joint-oil.

Symptoms.—Enlargement on the front and inside of the hock, where there is naturally a depression, sometimes with stiffness, but seldom lameness; this is generally soft and elastic, but may be hard and inelastic in old and severe cases, in this case producing lameness. The vein passing over the hock may be pressed by the swelling and thus distended with blood, in which case the disease is sometimes distinguished as blood spavin, and destruction of the vein has been very unwisely recommended.



161. BOG SPAVIN.



162. THOROUGH-PIN.

Thorough-Pin is an enlargement of the *back upper part* of the hock, and results from long-continued or excessive exertion, especially on hard roads, and may be caused by a sprain. It generally co-exists with bog spavin, with similar symptoms, except that in thorough-pin the swelling may extend to both sides of the joint, and the inclosed fluid may be easily forced from one side to the other.

TREATMENT.—In ordinary cases it is scarcely necessary or wise to attempt a treatment of what nature has done to obviate the ills of the friction, as it may cause no marked inconvenience; but should it interfere with the proper action of the joint by growing large, and produce lameness or inflammation of the synovial membrane, foment the joint three times a day with warm water; then arnica-lotion (one ounce of arnica in a pint of water) should be rubbed into the swelling three times a day. In about a week

apply a similar lotion of rhus in like manner. In long-standing cases *pressure* is the best treatment by far. This is best applied by a truss made specially for the purpose; but in the absence of one, a wet chamois-skin bandage may be bound firmly to the swelling, and a piece of lint put under it, the latter being wet with glycerine twice a day. Blisters are of no avail, but lameness has been removed by firing the affected parts.

BONE SPAVIN.

This is a bony deposit on the inner and lower parts of the hock-joint. It may be hereditary, a malformation of the joint existing at birth, though in this case the natural defect often does not cause lameness. The more common causes are galloping in heavy ground; slipping on smooth surfaces; long draughts; sudden throwing of the horse on the haunches; calks on the outside of the heel, without corresponding ones inside.

Symptoms.—In the early stages the enlargement may not be detected, but the horse does not bend the hock, and shows pain if the joint be pressed; hops on the toe of the affected limb when turned around or put in motion; snatches the toe up, as in stringhalt; drags the limb; after a while, if not at first, a small bony tumor may be felt on the inner and lower front part of the joint by rubbing the hand over the joint and comparing it with the joint of the sound leg examined in a similar way. Lameness may disappear with rest, though subsequent trotting will renew it; but this gradually leaves upon work. The inside of the hock is unnaturally heated. In later stages inflammation of the ligaments, depositions of cartilage or bone, and perhaps disease of the interior part of the joint, are added, when the lameness increases, and is worse when first brought from the stable, diminishing with motion. If the tarsal bones become stiff, the horse loses condition and seldom lies down.



163. BONE SPAVIN.

TREATMENT.—Turn the horse loose in a stall for about a month. Give rhus internally three times a day, and rub into the affected part a lotion of one part of strong tincture of rhus to eight of water. If a deposition of bone has formed, use the following:

Iodine,	1 drachm.
Iodide potassæ,	2 drachms.
Sulphuric acid.	2 drachms.
Palm oil,	4 drachms.

Mix.

First shave off the hair, and then smear this preparation thickly over the swelling with a thin, broad knife, or a flat piece of wood. While using this preparation, keep the head tied up for twenty-four hours. Do not clean the hock or remove the scurf which will appear in two or three days after the application is made. In from two to three weeks the same dressing may be made, a third usually not being required.

CURB.

Curb is an enlargement at the back part of the hock, three or four inches below the point, resulting from a sprain of the ligaments connecting the bone which forms the point of the joint with the larger bones below. A fluid is effused into the tissue, and depositions of bone are sometimes formed. Horses are called "cow-hocked" when the ligament is kept constantly stretched, thus making curb more liable to occur. It is rare in old horses, usually occurring between breaking and the eighth year. The main causes are galloping in heavy ground; leaping; ordinary work-horses predisposed to it from birth; running over hills.

Symptoms.—Soft, hot, tender swelling on the back and upper part of the shank-bone, which soon becomes hard and difficult of treatment; lameness. The head of the smaller bone of the shank is in some horses normally large, but the enlargement is hard and bony all the time, being thus easily distinguished from curb, in which the swelling is more or less elastic.

TREATMENT.—Raise the heel of the shoe to rest the ligaments. Give rhus internally three times a day, and apply rhus-lotion externally by pressure. To secure pressure on the hock, make a case of strong cloth to fit the joint, cutting a hole to fit the top of the bone forming the point of the hock which will sustain the case, lacing the front part together by tapes on each side; about two inches from the edge of the opening made for the point of the hock make a slit of proper length to admit the full width of the bandage with which the pressure is to be secured. This case is only to prevent the bandage from slipping down from the joint.



164. A CURB.



165. INDIA-RUBBER DRESSING FOR CURB.

Take the bandage (chamois-skin is the best, as it retains moisture longer than flannel) and the case, slip one end of the bandage through one of the slits, passing it from the *inside* of the case *outward*, then from the outside *inward* through the opening at the hock-point, and finally *outward* through the second side slip. Draw the bandage through so as to bring the other end inside, near the first side-opening, make the end fast there, put on the

case and fasten the tapes in front. Now wrap the long loose end of the bandage upon the parts requiring pressure, having under it a pad of chamois-skin, saturated with a half-ounce of arnica mixed with a half-pint of water. Keep the bandage wet with cold water. When the inflammation has subsided, rub in a lotion of one ounce of rhus to a half-pint of water.

The following are other methods of treatment, either of which may be used, though obviously two can not be used at the same time: (1). Moisten the hair with a tincture of acetum cantharidum, applied with a brush, then rub the part dry. Do not repeat this for several days, and use no fomentations after it. (2). A favorite remedy is one drachm of mercurius corrosivus and one ounce of spirits of wine, applied with a soft sponge, but not rubbed in. It may be repeated in ten days, if necessary. (3). One drachm of bin-iodide of mercury with one drachm of axunge may be rubbed in for a few minutes every day for ten days. Firing is usually cruel and unnecessary, but it not only removes lameness, but also prevents a return. It may be used when all remedies fail to give a permanent cure.

WIND GALLS OR PUFFS.

Around or near the joints are little sacs supplying the tendons, which are composed of membrane much like the synovial, which secretes small quantities of an oily fluid. If the tendons be sprained or their action be much increased, nature increases the secretion and thus produces a soft, elastic tumor known as wind gall or puff. The cause is usually a sprain of the tendons, or excessive or long-continued friction of the joints from quick work on hard roads. Low, marshy pastures seem to produce a tendency to an enlargement much like that resulting from over-exertion.

Symptoms.—Soft, elastic swellings near some joint, as the fetlock, hock or knee, generally the first, at the start as large as a small nut, but finally becoming much larger, and growing harder; absence of inflammation and lameness. The swellings may occur among the tendons and ligaments on the interior part of the leg below the knee, a little below the front of the joint, or on the upper back part of the joint. These swellings do not contain wind, as once was believed, but an oily fluid, and generally cause no harm. Occasionally, however, the increase of the fluid may cause inflammation, which extends to the lining membranes of the sheath of the tendons, very tender, puffy swellings appearing above the usual seat of wind galls; the inflammation thickens the membrane, and the fluid in the sacs changes from a straw-color and becomes suffused with blood; lymph may collect; the tumors become



166. WIND-GALLS.

firm and hard to the touch, and in old horses like bone, interfering with the action of the tendons and causing lameness.

TREATMENT.—Wind galls seldom cause lameness; hence it is usually not wise to treat them. If lameness ensues, however, it generally results from a sprain of the tendon or a joint, and will be removed by a chamois-skin pressure as directed under Bog Spavin. Should this fail to remove the lameness and swelling, foment the part a half-hour morning and evening with warm water, dry well, and then rub in a lotion of one ounce of rhus to one pint of water. Should the wind gall be very large, *and not connected with the joint*, it may be punctured with a small trocar on its *upper* surface, and the fluid be pressed up and out. A compress and bandage must then be applied to close the sac and exclude the air, and not be removed for two days. After that time, place over the wind gall a piece of lint soaked in glycerine, with oil-silk and a bandage over it. Renew this dressing night and morning. Keep the horse in a loose box, not taking him out for ten days or two weeks, and omitting all work for a month.

ULCERATION OF THE JOINT CARTILAGE.

Inflammation of the synovial membrane sometimes extends to the cartilage covering the ends of the two main bones of the joint, diminishing the secretion, causing ulceration, wearing away of the cartilage, and polishing of the surface of the bones, thus giving rise to what has been erroneously called porcelain deposit.

TREATMENT.—Remove the hair and apply, with a thin, broad knife (not rubbed in), a preparation made on the following formula:

Iodine,	2 drachms.
Iodide of potassa,	1 drachm.
Sulphuric acid,	2 drachms.
Palm oil,	½ ounce.

Mix.

Repeat the application in about three weeks, if the cure is not complete.

CAPPED HOCK.

This is usually caused by a kick, but may arise from an injury to the tendons at the point of the hock, as when horses injure themselves in lying down or getting up.

Symptoms.—An elastic, generally movable, swelling at the hock suddenly appears. It is of two kinds: (1). A mere bruise of the skin may

cause an effusion of serum into the tissue. (2). The synovial sac may be enlarged from an injury to the tendons. In the first kind, the enlargement may be easily moved about and is limited to the point of the hock; in the second, the enlargement remains fixed and is more deeply seated, the enlarged sheath being felt either above or below the point of the hock, with more tenderness and inflammation than in the first kind.

TREATMENT.—In new cases, foment the swelling three or four times a day with warm water, dry thoroughly, and rub in about a tablespoonful of a lotion made of one-half ounce of tincture of arnica in six ounces of water. As soon as the inflammation subsides, use in place of this lotion one made of a half-ounce of rhus in five ounces of water. When the swelling is not deep and is very large, without involving the true joint, the *upper* surface may be punctured by a surgeon with a small trocar, the fluid be pressed up and out, and diluted calendula be injected and pressed out in two minutes. Then apply a bandage as directed under Bog Spavin. If the pressure be omitted, the fluid will collect again and again.



167. CAPPED HOCK.

SPRAIN OF THE HOCK.

The tendons and ligaments of the hock are all subject to sprains from leaping, or galloping in heavy ground. The ligaments connecting the bones of the joints are specially subject to implication in sprains, and the disease will readily submit to proper treatment if taken in time; but the trouble is often not detected until inflammation has destroyed the elasticity of the ligaments, the latter becoming cartilaginous or bony. The symptoms are heat and swelling in the joint, some stiffness and lameness. The treatment is local, such as is applicable to general Sprains.

CAPPED KNEE.

This is caused by striking the knee against some hard body; by heavy falls; by thorns or other foreign bodies in the knee.

Symptoms.—The symptoms are a soft, elastic swelling on the front of the knee, with an absence of pain on pressure, except in case of a foreign substance being the cause.

168. ENLARGEMENT
IN CAPPED KNEE.

TREATMENT.—If a thorn be the cause, remove it. In all recent cases, with inflammation, give frequent warm-water fomentations. Arnica-lotion, one part of the tinc-

ture to twelve of water, should be rubbed in twice a day. In chronic cases, use a liniment made on the following formula:

Liniment of soap,	8 ounces.
Camphor,	1 drachm.
Liquor ammoniæ,	1 ounce.
Mix.	

Apply daily with friction until a scurf appears on the parts.

SPRAIN OF THE KNEE TENDONS.

When a sprain of any of the back tendons of the knee occurs, the fibers being lacerated, a swelling appears on the back part of the leg, which is tender on pressure, and at first hot and inflamed, becoming afterward hard, and sometimes ossified. The unsteady gait, wavering of the knees, inclination to lie down, and other symptoms will be easily recognized. Such sprain obviously makes the horse unfit for substantial service.

TREATMENT.—Immediately after the accident which causes the trouble has occurred, apply a chamois-skin bandage to the swelling and keep it wet with cold water. Should effusion of fluid have set in, with inflammation, put on a flannel bandage and bathe over it frequently with hot water during the day; at night placing on six or eight folds of lint saturated with arnica-lotion (one tablespoonful of tincture to a half-pint of water), covering the whole with oil-silk and a bandage. When inflammation subsides under this treatment, foment for a half-hour night and morning, dry the leg, and rub in a mixture of a half-ounce of rhus and a half-pint of water. Give rest and a loose box. At the beginning, put on a high-heeled shoe to relieve pressure on the tendons. Further treatment is indicated under general Sprains. The sinews may be contracted, rendering a division of the tendons necessary by a surgeon.

BROKEN KNEE.

Broken knee is a term applied to an injury imposed by a fall or striking the knee against some hard and sharp body, resulting in a bruise, a break of the skin, or a division of the tendons or membranous sacs of the joint.

Symptoms.—The skin may be simply bruised and not broken through, when the knee will be hot, swollen and painful. Or there may be a rubbing off of the skin, or it may be cut, torn and jagged, the lower tissues being injured, the sheath of the tendon also being exposed. Sometimes a fluid issues from the wound.

TREATMENT.—Should there be simply a bruise, apply warm fomentations until the inflammation subsides. If the swelling then continues, rub on daily a liniment made as follows:—

Soap liniment,	4 ounces.
Camphor,	$\frac{1}{2}$ ounce.
Liquor ammoniæ,	1 ounce.
Mix.	

If the skin be lacerated and bleeding, remove all grit by forcibly dashing water on the wound, or forcing it on with a large syringe. Then if the joint is not open, or the tendon not cut through, gently dry the wound by dabbing it with a soft rag or sponge, and *pour* on (not apply with a sponge) a little lotion six times a day composed of one part of the tincture of arnica to twelve of water. If the skin lies in a flap on the leg, the wound must be sewed up, but loosely enough to allow the swelling which will take place. In such cases only should a bandage be used for broken knee. Though it may be made of linen or flannel, it is better if made of chamois-skin, kept wet constantly with warm water after it is applied. Put the bandage on evenly, with light pressure, and leave it for a week, except as it gets loose and requires readjustment. A splint eighteen inches long and three wide should be fastened against the back of the joint to prevent the tearing out of the stitches. If the formation of pus is inevitable, foment the wound and put on a poultice of carrot or turnip, *never of bran*. This is best applied by drawing a woolen stocking over the knee, fastening it around the leg below the joint with tape, then filling in the poultice and fastening the stocking above. Repeating the poultice twice daily for two or three days will usually be sufficient, unless the granulation is excessive, when it should be sprinkled with finely powdered sulphate of zinc, *if it rises above the level of the skin*. In a few days the skin falls off, and, if the “skinning over” has not taken place, wash the part three times daily with a lotion composed of two drachms of sulphate of zinc, two drachms of acetate of lead, and one pint of water, thoroughly mixed.

CAPPED ELBOW.

This is caused by mechanical injuries from insufficient bedding; lying on rough, hard surfaces, as paving-stones; a shoe pressing on the elbow while the horse is lying down.

Symptoms.—A swelling, similar to that in capped hock, on the point of the elbow, which is at first elastic and movable, full of fluid, but later growing hard, or of a fibrous or cartilaginous character.

TREATMENT.—Foment and apply arnica-lotion, following up with rhus-lotion night and morning. If the swelling is not thus removed, a surgeon should pass a seton through it; or make an opening with a small trocar, remove the fluid, and then inject a lotion of calendula and water, one part of the tincture of calendula to four of water. Keep the horse tied up. In a day or two, should the fluid again collect, the surgeon may probe the swelling and apply a lotion of calendula to ward off fistulous results. If there be considerable inflammation, foment often with warm water.

SPRAIN OF THE STIFLE-JOINT.

Such sprain is uncommon, but its symptoms are plain, being a swelling at the joint, so near the surface that it is easily felt; pain on pressure; heat; unwillingness to move the hind leg, which is dragged along in trotting.

TREATMENT.—Apply fomentations of warm water often and rub in arnica-lotion night and morning. After the subsidence of inflammation leave off the fomentations and rub in camphorated ammoniacal soap liniment until a mild blistering occurs, and a cure will result after a few days of rest. The formula for the liniment is given under general Sprains.

SPRAIN OF THE FETLOCK-JOINTS.

Sprain of the fetlock-joints is sometimes located in the ligaments of the joints, but more commonly in the tendons behind and in front of the joint. The symptoms are swelling; lameness; heat; tenderness on pressure.

TREATMENT.—Bandage the swelling and keep up warm-water fomentations, followed by cold water. After inflammation subsides put on a chamois-skin bandage saturated twice a day with one part of rhus to eight of water. For other expedients, see general Sprains.

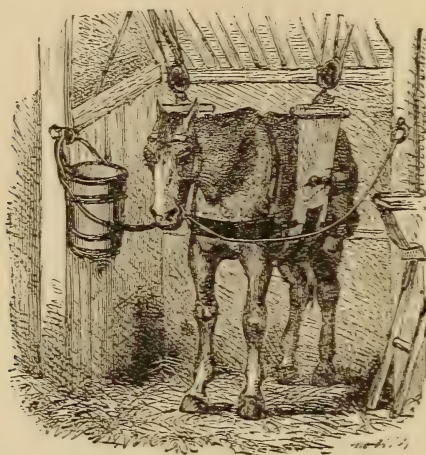
BREAKING-DOWN.

Breaking down is an actual rupture of the ligaments in the back part of the leg, above or below the fetlock. Any sprain of the back tendons receives the same name. While running the horse suddenly stops, bends the leg and rests it either on the fetlock (in real rupture) or on the toe (in sprains).

Symptoms.—In ordinary sprain, as stated above, the toe rests on the ground after the horse has suddenly stopped on a run, or the leg is held off the ground. In rupture of the ligament, the fetlock yields, and in extreme cases the leg rests on the heel and fetlock, the toe turned upward off the

ground. The horse may lie down, and sometimes hops on three legs. At first there will be much pain, quick breath and pulse, and other signs of fever and excitement.

TREATMENT.—Put on a high-heeled shoe for use when the foot is down. Put the horse in slings, and bind on firmly a chamois-skin bandage with a flannel bandage over it. Constantly apply warm-water fomentations for several days, not removing the bandages oftener than is necessary. In about ten days cold salt-water may be applied often to remove inflammation; then use other remedies as named under general Sprains. Give aconite



169. SLING FOR USE IN BREAKING-DOWN.

three times a day. Bran-mashes and grass are the best diet. The part will always be deformed and the horse will never be fit for any but slow and light work. The above treatment is designed especially for cases of actual rupture of the ligaments. That for sprains of the tendons should be the same as that given for Sprain of the Knee Tendons (which see).

SPLINT.

In this disorder the cartilaginous ligaments joining the large and small bones of the shank are converted into bone, and the process may extend to other parts if inflammation continues. It generally appears on the inside of the fore leg, but may affect any part of the shank-bones. Its causes are sudden or long-continued strain, causing inflammation of the ligaments; blows; putting *young horses* to work for which their partial develop-

ment is not suited; sometimes marks of splint are hereditary. It may result from inflammation of the sheath of the bone.

Symptoms.—Before the bony deposit there will be pain on pressure of the part affected; perhaps lameness, diminishing with exercise; later, a bony tumor, usually on the inside of the leg close to the knee, or half-way between the knee and fetlock; in case of lameness, there will be increased heat and tenderness in the tumor.

TREATMENT.—Give rhus internally night and morning in the early stages when there is inflammation of the cartilaginous tissue previous to the conversion into bone; in this case lameness is generally present. Iodide of potassa may follow rhus with good results, five to ten grains being given twice a day in water. In connection with the above remedies apply a lint-compress, wet in cold water and covered with oil-silk and a bandage; or foment twice a day, and as often rub in a lotion of one ounce of rhus in one half-pint of water.

Only in the early stages, when the tumor is forming, will internal remedies be of any avail. When the splint is confirmed and the remedies already named have failed, shave the hair from the tumor and with a thin, broad knife, or a flat piece of wood, lay on a thick coating, *without rubbing it in*, of the following preparation:

Iodine,	2 drachms.
Caustic potash,	2 drachms.
Sulphuric acid,	2 drachms.
Palm oil,	½ ounce.

Mix.

Apply as directed, keeping the horse's head tied up for twenty-four hours, and further treatment will be unnecessary, except that in some cases a repetition of this application will be needed in ten days or two weeks. In place of other remedies, sixty grains of corrosive sublimate may be put in one pint of water and rubbed in night and morning until the skin gets scurfy and tender. After discontinuing it for a day or two, rub the part with oil and thoroughly wash it with soap and water; then apply again. In rare cases the surgeon may be compelled to open the skin just below the splint, introduce a knife with a convex edge, turn the edge downward when the knife reaches the splint, and make two or three cuts in the sheath of the bone. Then further treatment is unnecessary, except the care needed for cuts in general.



170. VARIETIES OF SPLINT.

1, High Splint. 2, Low Splint. 3, Bony Growth on the Skin, also called Splint.

BRUSHING.

Horses with defective formation of the legs and those which are badly fed are subject to brushing, which consists in a foot striking the opposite fetlock, or the part above this, usually on the hind leg.

TREATMENT.—If there be swelling and soreness, apply cloths saturated in arnica-solution to remove the enlargement and inflammation. Then carefully strap around the joint a leather or India-rubber boot (a woolen boot turned down over the joint will answer, though not so well). If the horse has been poorly fed, strengthen the constitution by nutritious food. Give perfect rest until the bruise is healed. A repetition of the injury may sometimes be prevented by putting feather-edged shoes on the hind feet, though they are useless on the fore feet. This throws the joints farther apart. In *cutting* of the fore feet, make the shoeing perfectly level, carefully rasping off the part which strikes. It may, however, be necessary to use a boot all the time.

SPEEDY CUT.

Speedy cut occurs during rapid action, usually in horses with poorly-shaped legs, and is caused by one or both feet striking the opposite fetlock or the part above it. The pain is so much greater, and the shock to the system so much more severe, that it is a more dangerous trouble than brushing. It causes the horse to suddenly fall, with the rider, at high speed. A small bare place, partially covered with hair, will be found on the inside of the shank-bone; perhaps a cut, scab, or break in the skin. In bad cases the sheath of the bone and the bone itself may be swollen.

TREATMENT.—The treatment is the same as in Brushing. Usually, however, a boot must be made with a pad on the inside, reaching down to the fetlock from the knee and held in place by buckles.

OVER-REACH AND TREAD.

A wound made on the back part of the crown of the front foot by the hind foot is called an *over-reach*. One made on the corresponding part of the hind foot by a horse traveling behind is called a *tread*.

TREATMENT.—Owing to the peculiar organism of this part of the horse a cure is rarely effected, yet the possible serious nature of such wounds calls for strict attention. Any portion of the skin or horn that may be detached should be removed with scissors and the wound be cleansed and dressed with compound tincture of aloes and myrrh put on soft tow,

and bound on the wound. Leave this on two days; then it may be changed every day until the cure is effected. Avoid poultices and fomentations, except in cases of neglect, after pus has formed, when fomentation is advisable, with calendula-lotion applied. Long neglect may lead to quittor.

QUITTOR.

Quittor is an ulcer in the foot, usually on the inside, with an opening on the crown between the hoof and hair. It is caused by neglected or badly-treated over-reach or tread; by a prick in shoeing, nail, or other sharp substance, which sets up inflammation, with matter pushing itself up to the crown; by pus from corns; injuries of the feet in general. It requires prompt and good treatment to prevent ulceration of the adjoining cartilages.

Symptoms.—Lameness; heat; pain in a swelling found in the bulb of the heel or some part of the crown just above the hoof, where a little matter oozes out; by removing the horn some parts are found changed in color, with matter that is black and offensive.

TREATMENT.—Let out the matter when possible and inject calendula-lotion, one part of the tincture to four of water, into the tumor night and morning; then wrap the foot in a warm turnip or meal poultice. Rasp the wall of the foot under the conical swelling or crown until it springs on



171. QUITTOR BEFORE PUS BREAKS THROUGH THE CROWN.



172. QUITTOR AFTER PUS BREAKS OUT.

pressure of the finger. After inflammation is reduced, discontinue the poultice and merely dress the sore on the crown with the calendula-lotion. Either remove the shoe or use the bar-pattern, cutting away the lower portion of the hoof of the affected quarter so it can not rest on the bar. In long-standing cases, the discharge having become thin and greenish, the best injection is made of five grains of corrosive sublimate and an ounce of water, repeated daily until a cure is made. Before pus forms the injury may be removed by bathing the affected part in arnica-lotion, one part of the tincture to four of water, at first every three hours, then twice daily until all traces of the disorder have disappeared.

NAVICULAR DISEASE.

The navicular bone is behind and below the lower bone of the pastern and above the coffin bone of the hoof. Diseases of this bone lead to many forms of obscure lameness. The bone may become contracted as a result, and this contraction has been erroneously considered by some the cause of the disease. The main causes are strain of the tendon that passes over the bone downward to the coffin, over-exertion, or long-continued work on hard roads, by which the sac between the tendon and the bone becomes inflamed and its oily fluid is stopped, leading to ulceration of the bone and membrane.

Symptoms.—The horse stands with legs extended, putting the weight on the toe, the heel being lifted; perhaps the fetlock is bent, the toe thrown forward and stuck into the ground; lameness; heat; tenderness of the foot;



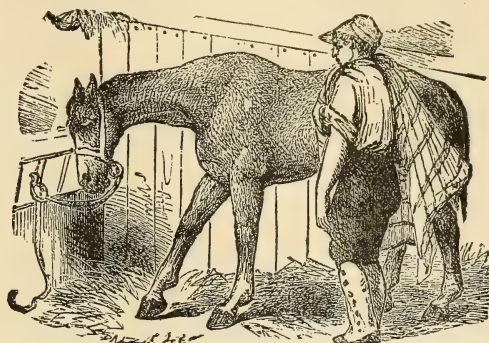
173. SECTION OF THE FOOT AND PASTERNS.

A, Coffin Bone. B, Navicular Bone, the seat of Navicular Disease. C, Coronary or Lower Pastern Bone. F, Cannon or Shank Bone. G, Horny Frog. H, Sensitive Frog. K, Sensitive Sole. L, Horny or Sensitive Sole. M, Outer Wall or Crust. N, Laminated Leaves or Horny Plates. O, Sensitive Laminæ or Plates, the Chief Seat of Founder.

lameness diminishes with exercise; pressure in the hollow of the pastern gives pain; tendon usually a little larger than is natural. After the disease has run some time, pressure of the thumb on the hollow of the heel causes pain; the inside quarter of the foot becomes straighter, and ridges

form on that part of the hoof; the foot and the sole grow more concave; the horn increases in quantity; thrush may form; tenderness at the point of the frog; perhaps fungoid granulations.

TREATMENT.—First remove the shoe and pare the sole until it yields under the thumb; then put the foot in a poultice kept wet with warm water. In a few days leave off the poultice and keep the animal standing in wet yellow clay in the day, putting wet swabs and pads on the feet at



174. POSITION OFTEN ASSUMED IN NAVICULAR DISEASE.

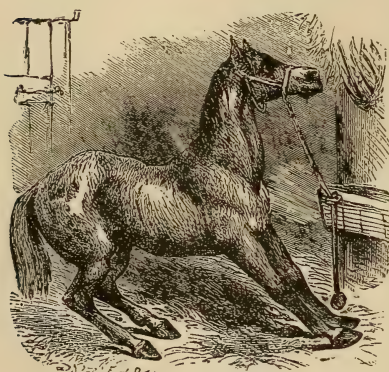
night. *Fine* sand is good to cover the floor of the stable with. After inflammation has subsided, and in old, confirmed attacks, blistering is good, but a seton passed through the frog by a surgeon is better, leaving it in four weeks and bathing night and morning with warm water. If granulations form, touch them with caustic. Give five drops of aconite every four hours to aid in reducing inflammation. A similar dose of rhus is desirable when a sprain of the tendon is suspected. When inflammation of the cartilages is supposed to exist, ten drops of phosphoric acid in a little water three times a day is advisable. Should all the foregoing fail, it may be necessary for the surgeon to separate the nerve to deaden the sense of feeling.

FOUNDER.—FEVER IN THE FEET.—LAMINITIS.

These terms are applied to inflammation of the tendons, ligaments, muscles, bone-extremities and tissues of the feet (see cut 173). It is caused by traveling on hard roads when the horse is fat or otherwise unprepared for quick work; standing in the water when the animal is much heated, followed by a chill; standing a considerable time tied up; fever; inflammation of the womb; inflammation of the lungs, or other constitutional trouble; excessive food.

Symptoms.—Shivering, followed by sweats; quick, full pulse; heaving flanks; short, quick breathing; lifting the feet in alternation, or frequently lying down and rising; animal fixed to one place, with back arched and hind legs under the body; if one attempts to lift the well foot, the animal crouches low or falls, and when down lies at full length; groans; looks toward the affected feet; crown hot and pained by slight blows.

TREATMENT.—Remove the shoes; cover the floor of the box with sawdust, put straw on it, and encourage the horse to lie down; thin the sole and apply a poultice made of turnip, or, still better, yellow clay, first taking out all small stones or grit, keeping the clay wet by pouring cold water upon it. In a few days the shoes may be tacked on (as may be done from the beginning in mild cases), and wet felt pads and swabs be put on. If the horse be allowed to stand, these poultices and cloths may be omitted, and the feet be put in some vessels containing warm water, the temperature being raised gradually as high as the hand can well bear. Arnica tincture, in five times its quantity of water, may be used as a lotion to bathe the ankles and legs every three hours; or the feet may be put into vessels containing the lotion; or cloths may be saturated in it and wrapped around the pastern of the affected legs, tow similarly soaked being put into the soles.



175. FREQUENT POSITION IN ACUTE LAMINITIS.

As an internal remedy, give five to ten drops of aconite every hour or two in a little water for very hot feet, especially at the crown; great lameness; horse unwilling to move, lies down, groans, standing with the hind feet drawn under the body; fever; quick, full pulse; frequent breathing; hot mouth. Give arnica, as directed for aconite, for founder from wounding the feet in fast or long drives on hard roads, and for stiff legs and inflamed feet. Give arsenicum for founder from excessive food; feet very tender and

painful; and when aconite has reduced the primary violent symptoms. Phosphoric acid is very important for lameness, hot and tender feet, and softening of the horn. Nux vomica is good for loss of appetite; abdomen drawn up; paralysis of muscles. When fever or inflammation arises in the feet without any assignable cause, wash them thoroughly with tepid water to remove dirt and other foreign matters, and apply tincture of arnica in the earliest stages, before ulceration ensues, or when some other affection is threatened. Give mild, easily digested food and cooling drinks.

CHRONIC FOUNDER OR LAMINITIS.

The acute form of founder, or laminitis, which has been described above, may lead to a chronic type, and this is to be dreaded.

Symptoms.—Feeling of lameness, though not actual lameness, in both fore legs, which are unnaturally warm; tapping the front legs causes pain; the animal lifts his feet but little in walking, and puts his heels upon the ground; the sole becomes flat or convex; the crust breaks easily; more lameness with a weight on the back than when the animal is led on a trot.

TREATMENT.—If no inflammation be perceptible, internal remedies are useless; but if it be noticed before the tissues lose elasticity, or the foot becomes changed in appearance, give rhus three times a day. Keep felt pads on the feet; apply to the crowns of the feet cloths soaked in rhus-lotion. Feed mash and green food. Favorable results will be experienced by removing the shoes and turning the animal into a large stall, the floor being well covered with sawdust or fine tan-bark. If the foot becomes again elastic, work on soft ground may be done, but a very short walk on hard ground will produce inflammation. A thin layer of rubber or leather between the shoe and hoof will do much to prevent a return.

PUMICED FOOT.

This is a flatness or convexity of the sole, with a soft, spongy horn-growth, the middle of the front part of the hoof being depressed. It is a result of founder.

TREATMENT.—It is incurable. Relief may be given by putting on a broad-webbed shoe, with gutta-percha or leather under it. Where the crust is much lower than the sole, a thick shoe with a narrow web is better, a piece of gutta-percha the breadth of the heel of the shoe being put next to the crust to raise the sole from the ground. Require only slow work, and that with very much rest. Dress the sole daily with hot tar.

SEEDY TOE.

Seedy toe arises often without an assignable cause, though it may follow founder, or result from dirt or gravel working in at the edge of the sole, or from the clip of a shoe pressing on a hoof that is deficient in cohesive power, from blows, as from too hard hammering, and other means of violence.

Symptoms.—The horn at the toe crumbles off like sawdust or rotten wood; an opening leads up between the outer and inner crusts of the wall

of the hoof, sometimes going as high as the crown; tapping on the wall with a hammer determines the extent of the separation. Difficulty may be found in getting a piece of horn sufficient to hold a nail, and side clips may be necessary.



176. A HOOF AFTER
REMOVAL OF A
SEEDY TOE.

TREATMENT.—Cut away the crust so far as it is separated from the underlying layers of horn, and wrap the foot in tow and tar, bound on with tapes; a mild blister at the crown will hasten the growth of the wall. Another successful plan is to keep the horse standing in clay after covering the foot with adhesive dressing, not blistering at all.

THRUSH IN THE FEET.

This is an offensive discharge from the frog, resulting from an inflammation of its sensitive parts. The discharge may be scanty or free, and if the disease be neglected, it may result in injury to the soles, frog and heel, causing canker (see under Canker). It is caused by contraction of the hoof; keeping the foot wet with urine; frequent use of cow-dung for stopping up the frog; dirt or moisture in the frog; bruises.

TREATMENT.—Remove all portions of the bone that are detached or run under; in case of much lameness or inflammation, apply warm poultices to the feet for two or three days, afterward putting into the cleft of the frog tow steeped in a lotion of one part of tincture of calendula to three of water. If the heels be contracted and high on the front feet, tips are the best expedient for producing a healthy condition. It may be necessary to get leather soles for horses that are in the habit of standing in their dung. If there be no lameness or contraction of the hoof, an application of calomel, in the powder, to the affected parts, will usually effect a cure. If, however, it be considered dangerous to stop quickly the discharge, do not use calomel, but, put eight ounces of tar or treacle and one ounce of pulverized sulphate of copper in a ladle and let them simmer until a reddish-brown color appears, and apply a small amount every second day on tow to the cleft of the frog. A lotion of one part of carbolic acid to twenty of water is deemed the best of all remedies by good authorities, the inflamed part being bathed with it. Creosote, ten drops internally four times a day, is useful for healing the part and correcting the bad state of the constitution. Given internally, with an external use of carbolic-lotion, it is excellent. Phosphoric acid, given as directed for creosote, is desirable when inflammation of the deep tissues of the foot is threatened. Give light and nutritious food, not stimulating, with rest and a perfectly clean stable.

CANKER IN THE FEET.

Canker in the feet often results from neglected thrush, the inflammation extending from the horny frog to the horny sole, when a fungus-secretion forms. The coffin bone may be affected. Its causes are the same as in thrush—long-continued moisture, especially with decomposition and heat. In some cases it may be constitutional, or it may follow grease.

Symptoms.—Where horn is removed from the sole, fungous growths appear, covered with a whitish, offensive matter. In other parts the horn is discolored, with a dark-colored fluid underneath. When the disease has run some time, the whole frog and sole may be ulcerated.

TREATMENT.—Freely expose the diseased parts by removing all dead or detached pieces of horn. Put on a shoe with a plate to cover the frog, attaching this plate to the toe by a hinge, and to the heel by a bar or two screws; this shoe furnishes pressure to the frog, *which is all-important*, and makes dressing possible without removing the shoe. A substitute is gutta-purca heated in boiling water and slipped under the shoe. This can be taken out and put in without removal of the shoe. In most cases the morbid growth will be stopped and healthy horn grow by giving Fowler's Solution of arsenic three times a day internally, with an external use of carbolic acid applied with pressure. The most certain remedy is a caustic (nitric acid, sulphate of copper, carbolic acid or tar) applied under the shoes made as above described, putting tow under the iron or gutta-percha sole to secure pressure. The caustic-dressing may be repeated every two or three days until the horn becomes healthy. When only a thin, watery discharge is seen, chloride of zinc, two grains to one ounce of water, or calomel in powder, applied daily, will usually suffice.

CORNS.

A corn is a very sensitive, fungus-like growth of horny matter and granulations of a reddish color between the horny sole and sensitive part of the foot, generally at the inside of the sole of the fore feet. In some cases a pus-like matter forms under the sole, or breaks out at the crown as in quittor. It is caused by contraction of the hoof or pressure from bad shoeing.

Symptoms.—The angle between the bars and crust is of a dark-red color, soft, fungus-like, painful, and perhaps attended with lameness.

TREATMENT.—For much inflammation and formation of pus, remove the bars and other means of pressure, and apply at least twice a day arnica-lotion, one part of the tincture to four of water. In most cases it is suffi-

cient to lower the heel so as to remove the pressure of the shoe, then to cut away the corn as far as possible and dress it with muriate of antimony, putting on a bar-shoe. If the horse has strong feet, it may suffice to cut away the bars, put on tips without cutting down the heels, and dress with muriate of ammonia. For riding-horses do not use bar-shoes, but thicken the shoe a little, or spring it at the heel. A three-quarter shoe has been used in such cases with great benefit and comfort to the horse.

SANDCRACK.

Sandcrack is a fissure or partition in the hoof, usually at the inside quarter of a fore foot, or in front of a hind one. Its chief causes are dryness and brittleness of the hoof from an injury to the crown-surface, or from a lack of the gluey matter which binds the fibers, the latter cause being common in warm, sandy countries.

TREATMENT.—Remove all pressure of the shoe beneath the crack, a bar-shoe being the best in most cases. Arnica-lotion will relieve pain and lameness, and an application of powdered blood-root will check the appearance of proud flesh. Should the sensitive layers of the hoof be squeezed by the crack, resulting in lameness, thin down the edges of the horn at the crack and foment the foot frequently until all inflammation subsides. The



177. SANDCRACK DRESSED AND SHOD.



178. CURVED OR ANGULAR FISSURES FOR CURE OF SANDCRACK.



179. A FOOT WITH TOE-SANDCRACK, BANDAGED WHEN WORK IS REQUIRED.

crack should be closed as soon as possible, and prevented from extending up to the crown. To this end, clean out the crack, rasp its edges thin, take a sharp, red-hot firing-iron, and if the sensitive layers be not exposed, run it slightly down into the crack until it causes a gluey discharge, which will hold the sides together. Then make short horizontal fissures nearly through the horn, one above and one below the crack, and cover them and the whole wall of the hoof with shoemaker's wax, bound on with broad tape, to keep the edges of the crack together, to exclude moisture and dirt, and to protect the new horn as it grows from the top downward. The treatment may necessarily be long, but if carefully observed will effect a

cure. Another method is to draw the crack together and put over it a cap made of thin steel, secured by small screws introduced into the hard horn of the hoof. This and the use of a bar-shoe will be effectual.

FALSE QUARTER.

This consists in a separation of the horny fibers of the foot, similar to that in sandcrack, which produces lameness and weakness in the affected heel. Its causes are injury to the crown in quittor; treading of the horse on his inside quarter; treading on the outside by another horse; other external causes.

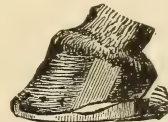
Symptoms.—Deficiency of horn in the side of the hoof, or a fissure, generally with a horny bottom; in some cases, exposure of the sensitive layers, which become inflamed, attended with oozing of matter or blood, and lameness.

TREATMENT.—In the absence of inflammation, rasp the quarter until it springs under the thumb; put on a bar-shoe *that does not press on the affected quarter*. Take the horse from



180. FALSE QUARTER.

work and apply a blister to the crown; or fill up the fissure with an adhesive dressing, as tar, pitch, or heated shoemaker's wax, putting broad tape over the whole. When the fissure is open at the bottom and blood or matter oozes out,



181. SHOEING SUIT. ABLE FOR FALSE QUARTER.

rasp the quarter thin, put on a bar-shoe, and bathe the foot with hot water and a lotion of calendula during the day, a tablespoonful of the tincture of calendula to a tumblerful of water; at night, apply dirt wet in the same lotion, and upon it a linseed or turnip poultice. If work be required when the crack is open, fasten on lint and calendula-ointment with tapes.

SORE SHINS.

By this term is meant a disease which is primarily an inflammation of the covering of the front part of the bones from the knee to the fetlock. It occurs most often in young horses, and results from concussion incident to fast work.

Symptoms.—Inflammation of the sheath of the bones below the knee, followed by bony matter in small knobs, sometimes in layers, on the knee.

TREATMENT.—Rhus-lotion, one ounce of the tincture to fifteen ounces of water, should be applied several times daily, and ten drops be given internally every four or five hours. This will arrest if not cure the trouble.

RINGBONE AND SIDEBONE.

Ringbone is a bony enlargement on the pastern-bone just above the crown, finally surrounding the bone. *Sidebone* is a like enlargement at the back part of the crown of the foot, either inside or outside; the name is also applied to ossification of the elastic wings of the bone of the foot, which causes a change in the structure, reducing or destroying the elasticity, and producing lameness. Sometimes both disorders exist at once in the same leg, especially in heavy draught-horses, destroying all action save in the fetlock. The hind legs are less often affected than the fore ones, though all four may be attacked at the same time. The chief causes are a false step; a dislocation; a blow; great strain on the ligaments of the joints; perhaps hereditary weakness of the fibers and ligaments.

Symptoms.—In *ringbone*, a hard, unyielding enlargement of bone above the crown of the foot; in *sidebone*, a similar growth a little lower; pain from motion; affected parts in first stages hot, tender, perhaps swollen; occasionally great throbbing of the arteries.

TREATMENT.—In the first stages, for pain on motion, hot, tender, swollen parts, or for throbbing arteries, give aconite internally, and apply it externally by saturating a linen rag in dilute tincture—one part to six of water—binding it on and keeping it moist until inflammation wholly disappears. A lotion of rhus, one ounce of tincture in fifteen ounces of water applied several times a day externally, a teaspoonful of the same dilution being given internally every four hours, is beneficial. In the early stages this will cure ringbone. A lotion of corrosive sublimate, sixty grains dissolved in one pint of hot water, is highly recommended. Rub it in until the skin gets thin and scurfy, that is, for a few days; then discontinue a day or two and rub the parts with oil and wash well with soap and water. After this rub it on again. Put on a bar-shoe, the bar resting on the balls of the frog, and pare the hoof so as not to rest on the shoe. Continue the use of this shoe when work is resumed. Considerable time is required.

HOOF-BOUND.—CONTRACTION OF THE HOOF.

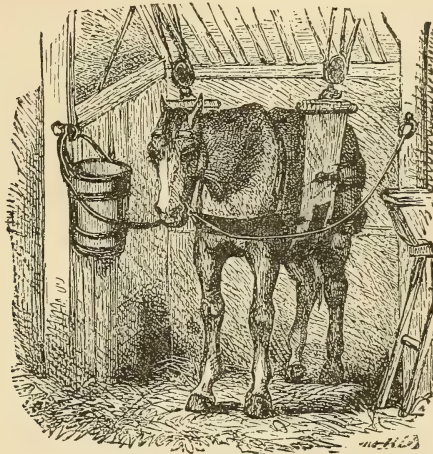
These terms are applied to a contraction of the foot, which may be natural, and which may be aggravated if not independently caused by defects of shoeing; leaving the shoes on too long; too much paring; neglect in providing moisture by pads for the soles; excessive litter lying all the time in the stall; slow inflammation of the fleshy parts and bone-coating near the horny surface; irregular and insufficient exercise, with rich or excessive feeding.

Symptoms.—If it comes on suddenly, lameness occurs at once; if gradually, lameness comes on slowly; shuffling of the feet, or very slight lifting of them; repeated stumbling; narrow heels (especially the inner one) of the fore feet; the affected foot while the horse stands is placed forward; both feet being affected, this position is taken by them alternately; occasionally the foot is pinched up so as to offer little surface to the ground; sometimes marked hollowness of the foot, obscurity of the sole, and the clefts of the frog nearly invisible; retraction and indentation externally between the crown and crust, generally midway between them.

TREATMENT.—Regular exercise, plenty of moisture properly applied with pads to the foot, careful fastening of the shoes, with frequent changes of the same, will prevent further development, and correct the trouble.

OPEN JOINTS.

The pastern, hock, knee, and stifle joints are liable to be opened by blows, falls, sharp-pointed instruments and other mechanical agencies.



182. SLING FOR OPEN JOINTS.

Symptoms.—Joint-oil, like the white of an egg, is discharged; in a day or so swelling and fever; pain; perhaps lock-jaw, or permanent stiffness of the joint.

TREATMENT.—Keep the horse quiet so the joint is not in action. If the opening be large, or when it is in a large joint, as the stifle, put the horse in slings. Ten drops of aconite every three hours should be given if there be much pain and fever. The greatest difficulty, aside from

keeping the horse quiet, is to close the opening and stop the discharge. Various expedients are resorted to. In slight cases the white of an egg, beaten well and applied to the opening, may stop the oil. When the opening is large, one part of calendula tincture to three of water is better, and may suffice. Perhaps the best, as well as the simplest, method is to apply to the opening with the handle of a spoon fresh finely-powdered, slaked lime, putting it on every time the oil appears, both day and night, never removing one coat, but putting every new application upon the old. In some cases the only effective means is the sewing of the wound, leaving a chance for it to swell without tearing out the stitches.

In open knee-joint, cleanse the wound thoroughly, cut off with scissors the cut parts which will eventually slough off, and stitch up the wound, after which it may be well to apply the white of egg, spread on a cloth and bound with broad tape. Keep the horse's head tied up so he can not lie down. In about a week remove the bandage and cleanse the wound, *not removing the coagulum in the opening, and keeping water out of it.* After the discharge stops apply one part of calendula to eight parts of water four times a day or oftener. The knee may be kept at rest by a gutta-percha splint, twelve inches long and four wide, first softened in hot water, then fitted snugly to the irregularities of the back part of the leg, and secured by bandages around the leg above and below the knee. A small opening may be made in the front to admit applications for the wound. Though for all large openings the slaked lime is the best application, powdered sulphate of zinc, corrosive sublimate, collodion, and cotton-wool have been used with marked effects. A strong decoction of butternut bark is very effectual. The diet should consist of green food and bran-mashes.

PRICK IN THE FOOT.

Prick in the foot arises from the smith driving a nail so as to injure the sensitive parts of the foot; from the animal picking up a sharp stone, thorn, piece of glass, nail, or other sharp body, which in some cases enters the toe, wounds a joint, and lets out joint-oil.

Symptoms.—If the cause is a nail in shoeing, the horse may flinch at the time, or may go lame the next day, being pained if the hoof be tapped with a hammer; lameness; hot and tender foot; sometimes a black, pus-like discharge issues from the wound when opened; the sole probably “under-run.”

TREATMENT.—Make a free opening for the matter to escape; bathe the foot for a half-hour in warm water; pour in a solution of calendula, one

part to six of water, and put on a poultice of turnip or linseed-meal, continuing it as long as matter forms. When the pus stops, tack on the shoe and keep on the foot a felt pad wet with water, applying the calendulation twice a day. If work be required before horn has covered the wound, use a leather sole and tar. Clean out the hole by cutting away the horn, put in tar, and burn with a hot iron. This will both keep out the dirt and cure wounds that result from pricks of nails, thorns, and the like.



CHAPTER X.

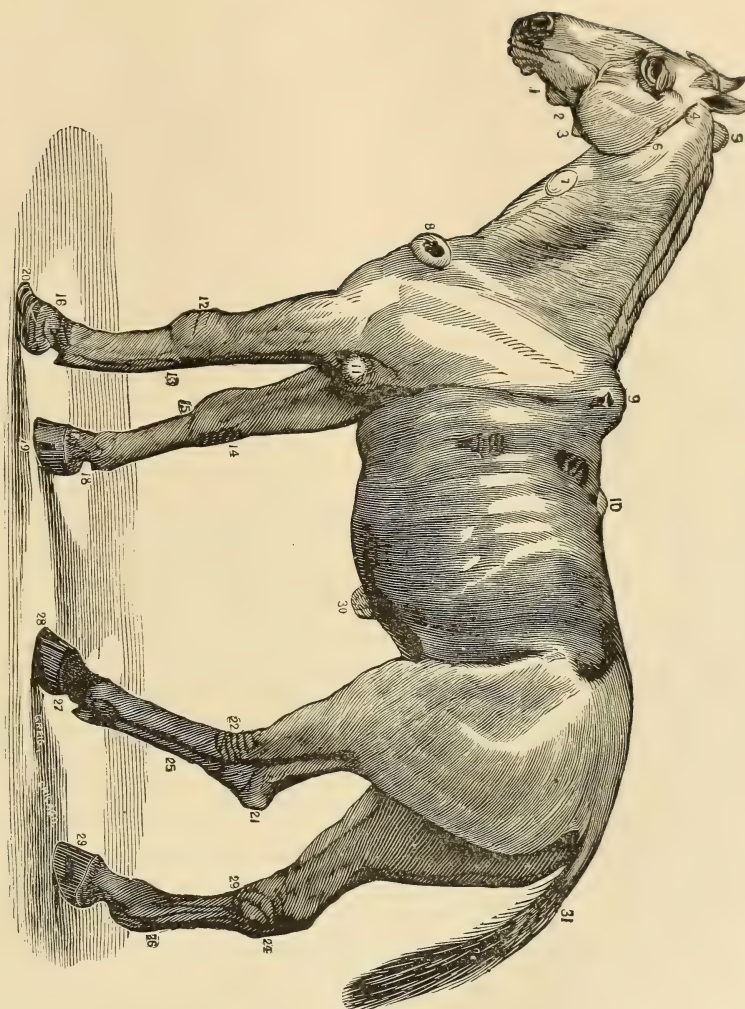
GENERAL DISEASES AND INJURIES.

SIMPLE FEVER.*

SIMPLE fever has various causes: Sudden changes from heat to cold, especially when the system is reduced by too much exercise; bad food and air; great changes in the weather; shedding the coat, which is a very common cause; indigestion, constipation, and various other constitutional derangements.

Symptoms.—A very common symptom is a staring coat, with cold legs, perhaps with a shivering fit and trembling of the muscles on the shoulder-quarters and flanks; the animal yawns, hangs his head, and seems unwilling to move; the pulse weak, variable, and not much increased in frequency, and the appetite lost. In the second stage, the coat is smooth and the shivering fit is succeeded by a higher temperature throughout the body, sometimes increasing to sweating; but generally the skin is hot and dry, as well as the mouth and all of the internal organs, especially the membrane lining the alimentary canal, causing costiveness; urine scanty, high-colored, and difficult of passage; pulse and breathing hurried; the animal is restless, frequently lying down for a short time, shifting his legs often, dropping his ears, and being generally listless and indifferent, though he will plunge his nose into cold water and hold in his mouth water to cool his tongue, which may seem to be red at the edges and point, the center being white and perhaps creased. Should the pulse continue small and quick, and the breath and dung offensive, typhoid fever has set in, and to the article on that the reader is referred. If the symptoms remain strong and not relieved for some length of time, any organ inherently susceptible to weakness will suffer functional and organic derangement, and the disorder is called "symptomatic fever." This is usually due to excess of riding, driving, heat or feeding, though it is also caused by injuries about the joints and feet, and frequently attends rheumatic troubles. Free feeding in a warm

* The reader should note the "Remarks upon Fevers" on page 225.



183. EXTERNAL MARKS OF DISEASE.

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| 1. Caries of the lower jaw. | 10. Saddle-gall. | 21. Capped hock. |
| 2. Fistula of the parotid duct. | 11. Tumor of the elbow. | 22. Mallenders. |
| 3. Bony excrescence or Exostosis of the lower jaw. | 12. Induration of the knee. | 23. Spavin. |
| 4. Swelling by pressure of the bridle. | 13. Clap of the back sinews. | 24. Curb. |
| 5. Poll-evil. | 14. Mallenders. | 25. Swelled sinews. |
| 6. Inflamed gland. | 15. Splint. | 26. Thick leg. |
| 7. Inflamed jugular vein. | 16. Ring-bone. | 27. Grease. |
| 8. Fungus tumor, produced by pressure of the collar. | 17. A Tread upon the coronet. | 28. A crack in front of the foot, called cow-crack. |
| 9. Fistula in the withers. | 18. Quittor. | 29. Quarter-crack. |
| | 19. Sandcrack. | 30. Ventral hernia. |
| | 20. Contracted or Ring foot of a foundered horse. | 31. Rat-Tail. |

stable immediately after the horse has come off of pasture may cause disorders of the digestive organs which will terminate in this fever, and inflammation from local injuries, if not immediately reduced, may affect the whole animal, giving rise to a form of fever which is alarming and should be carefully treated, while the simple form need cause no uneasiness unless the affection take a local seating.

TREATMENT.—When the coat stares, or the animal shivers, yawns, hangs his head, and is unwilling to move, and the pulse is small, if these symptoms are not the result of over-fatigue, aconite should be given every twenty minutes, until the shivering fit is succeeded by the hot stage, when, if the pulse is full and quick, and the body hot or sweating, it may be continued every fourth hour. Symptoms for aconite are also restlessness, short, painful, anxious breathing, much trembling, burning, dry mouth, red eyes and nose, great thirst, dry, hot skin. Belladonna is often useful when aconite does not wholly relieve the symptoms for which it was designed. After the shivering fit, if the pulse should remain weak and not much increased, the dung hard, and the urine yellow, or white and turbid, nux vomica should be given every four hours. Ammonium causticum is needed when, in addition to the symptoms calling for aconite, we also find extreme exhaustion; listlessness; short and difficult breathing; restlessness even when lying down; very cold ears, nose and legs; sweats; heaving flanks, at which the animal occasionally looks in a despondent manner; pulse ninety to one hundred, yet small, feeble, and quite indistinct; no passage of dung. Give bryonia if there be great weakness and unwillingness to move; hard and quick pulse; short and painful breathing, attended with catching at the sides and a grunt; pain on pressure of the ribs; frequent shaking and shivering; great thirst; sweats at night; scanty urine; constipation. Arsenicum may especially be used when the animal is recovering. In the way of general care, instead of corn frequently give warm bran-mashes in small quantities. Sustain the strength, when declining, with a drench of a quart of gruel. If diarrhœa sets in, treat it with cold water and flour as a drink. When drinking-water is given, make it tepid. Clover and timothy are desirable when there is no purging. Arrowroot in a little wine is good for the weakness in the later stages of fever. Use additional clothing and wrap the legs in flannel if they are cold. Keep the stall cool. If it be very cool weather, the temperature should be about 55° F. Provide plenty of clean bedding. After the fever the animal may have a short walk, and gradually take his accustomed food and work. For constipation an occasional injection of warm water will be advantageous. Remember that a feverish condition often attends a specific disorder whose treatment is requisite to the cure of the fever.

TYPHOID FEVER.

This form of fever is quite common among horses. It is indicated by offensive breath and evacuations, quick, small pulse, black tongue, and loss of strength from the first. Among its causes are atmospheric influences, as improper ventilation, with lack of regard to general hygiene. In cold weather it is usually traced to the closing of all inlets for fresh air, by which the blood is deprived of the requisite oxygen. Thus the organs which supply and purify the blood and conduct the circulation are deranged and their fluid has undergone those damaging changes which are familiarly known as "poisoning of the blood." It seldom continues a great time without being complicated with other disorders connected with some part that is specially involved, as the throat or stomach. It may also arise from contagion in unhealthy stables, or even in apartments that are wholesome and well ventilated.

Symptoms.—A shivering fit, followed by a coldness of the skin and extremities; small and quick pulse; scanty and high-colored urine; the bowels, at first constipated and the discharges covered with slime, become relaxed, the discharges being offensive; the nasal membrane is of a dark-red color or leaden, and sometimes a red serum may be seen trickling from it; the tongue is red at the edges, but the middle is a dirty-white, with a brownish streak down the center; offensive breath. Should the disease prove fatal, cold clammy sweats will cover the body, violent diarrhœa or dysentery ensue, and then death will soon take place.

TREATMENT.—Ammonium causticum may be given every third hour if extreme debility be present and the surface of the body be cold; it is also an excellent remedy when the fever is of a putrid type and the breath is very offensive; in some cases it is best to alternate it with mercurius corrosivus. Nux vomica is needed for sudden decline of strength, abdominal pains, quick and feeble pulse, fluttering of the heart, cold extremities, and spasm of the muscles of the pharynx and gullet; it is especially useful when the body is warm, the pulse quick and feeble, the urine scanty and high-colored, and the bowels constipated, a dose every two hours being suitable. If diarrhœa sets in, with swelling in the sheath and legs, arsenicum should be given; the same is particularly useful for such a condition in the later stages when there is great prostration, and when abscesses of a malignant character form about the head and other parts of the body. When dysentery comes on, with bloody discharges from the bowels, mercurius corrosivus should be used instead of arsenicum, every two hours until the blood disappears from the discharges, the arsenicum being then resumed. The best diet consists of arrowroot and gruel, in drenches of a quart at a time if the horse will

not voluntarily take them. Soft bran-mashes, boiled oats or barley, oil-cake, and the like, may be given in small quantities. Insure pure air and water, perfect cleanliness and warm clothing, until health is restored.

SCARLET FEVER.

Scarlet fever is marked by scarlet spots on the mucous membrane of the nose and lips, varying in size from a pin-head to a pea. In this disorder patches of hair stand up on different parts of the body. It is both simple and malignant.

Symptoms.—The symptoms of the *simple* form, which usually sets in from the third to the sixth day of epidemic catarrh, are elevated patches of hair on the neck and legs, in some cases confined to the hind legs, which exist without any elevations on the skin below; swollen limbs; pulse sometimes considerably increased, sometimes but little; scarlet spots on the mucous membrane of the nose, occasionally in only one nostril; any soreness of the throat previously existing in catarrh may or may not be greatly increased. At this stage the horse may be cured by judicious treatment in a dry, comfortable stall; but if left in unfavorable circumstances, a malignant form of this fever or other disease will probably set in, endangering the animal's life. The *malignant* form may appear with violence at once, or may succeed the simple type. The horse for some days has apparently been affected with influenza or catarrh, with severe sore throat, cough, poor or no appetite, general weakness, and watery discharges from the nostrils; then the condition suddenly changes, the limbs become swollen throughout, or in lumps which are many and large, hard, painful and hot; and portions not swollen have elevated patches of hair; the nostrils discharge a mixture of blood, serum and watery or foul matter; the throat becomes intensely sore; the spots on the membrane of the nose become large, and of a deep-scarlet color; the cough grows worse and suffocating; the pulse is weak and feeble, often running up to 90 or 100 per minute; the swollen limbs are very sensitive, and the animal, if not disturbed, will stand perfectly still for hours. As the disease grows worse, large blisters will appear on the limbs, mainly around the joints, which burst and give out a bright, transparent fluid that is very irritating to the surrounding surface. Sometimes the extremities, the ears for example, will appear white, the skin of the part shrinks and is dry and hard, the whitened parts breaking off in a day or two, and leaving a raw surface which gives off a watery discharge. The appetite is gone, constipation ensues, and the urine is scanty and of a brown or yellow color. Within a day from the beginning the membrane of the nose has large spots of a purple color which present

a raw and watery surface—like changes taking place in the blisters around the joints.

Under favorable circumstances the simple type will abate about the fourth or fifth day, but the malignant form generally runs seven or eight days before a change takes place. In extreme cases the purple spots may be seen under the skin and in the mucous membranes, and this condition be followed by an emaciated and loathsome appearance of the animal. When the scarlet blotches or elevated patches of hair appear early, and the pulse has a firmness and regularity in its beats, the result will probably be favorable; but slight hopes of recovery can be entertained if there be much weakness, a feeble and irregular pulse, a change of the scarlet blotches to purple, a swelling of the head, and a typhoid type in the fever.

TREATMENT.—When the throat is the chief part affected, when the swelling of the limbs comes on suddenly and is hot and painful, and when the blotches on the nasal membrane are of a bright-scarlet color, belladonna should be given. If the throat is relieved by belladonna, and the legs are still swollen, hot and tender, *rhus* will be found useful. Should the soreness of the throat not be relieved by belladonna, or should spreading sores of an unhealthy character appear on the skin, administer mercurius. When marked weakness and emaciation ensue, and the pulse is quick and yet hardly perceptible, the legs, sheath and breast becoming dropsical, the appetite lost, the animal showing a great indisposition to move, arsenicum will prove efficacious. Should the soreness of the throat persist in spite of the remedies named, *apis* and arsenicum in alternation will probably afford the desired relief. In the *malignant* type, when there is a marked tendency to a breaking down of the organic structure, and a bleeding of the mucous membrane, with a bloody and purulent discharge from the nose and swelling of the lips, *arnica* and arsenicum should be given in alternation, the doses being four hours apart.

SMALL-POX.

This is an eruptive disease which attacks the lips and face of the horse, but mainly the heels, in the latter case being distinguished with difficulty from grease. It is of an epidemic nature, and any constitutional derangement may promote it during its prevalence.

Symptoms.—Irritative fever, growing worse as the disease advances; irregular red spots, singly or in clusters, more or less elevated, on the reddened parts of the skin, chiefly on the inner side of the fore legs, on the belly and between the thighs, becoming day by day more numerous and more elevated, and forming minute tumors which grow pale and discolored

about the fifth day, with lymph on the surface which thickens and is first white, then yellowish, when the top becomes flat or depressed. In from a week to ten days the tumors begin to dry, but the process will be retarded by the presence of sores if the skin has been severely rubbed. During the whole time previous to the drying process, new tumors will be forming, but these gradually disappear as the drying sets in, leaving brown spots which finally pass away. A few bare spots remain at last (occasioned by severe rubbing), upon which the hair does not grow. If great offensiveness of breath, sweat and dung be noticed afterward, sudden indications of inflammation of the lungs may be suspected, such as hissing and rattling breathing; copious, yellowish, thick matter in the nostrils; violent cough; discharge of thick, yellow, sticky phlegm from the mouth, and the like.

TREATMENT.—Though this may not require special treatment, it is advisable to give aconite every three hours at the outset if there be much fever. Antimonium tartaricum is beneficial for all stages, including the lung-difficulties so often attendant—four drops once in three hours. Give arsenicum, six drops every three hours, for prostration, purging, tendency to sloughing, and inclination of the system to sink to a low state.

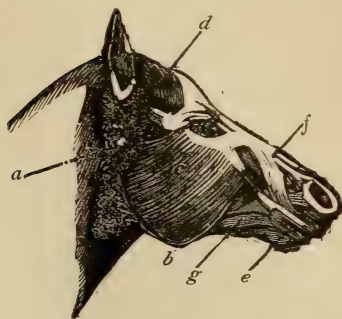
MUMPS.

This disorder is occasionally found among horses, and is an inflammation of the large salivary glands behind the margin of the lower jaw, and behind the ears. The large glands within the lower part of these salivary glands are often affected too, when strangles occur. They are caused by exposure to wet and cold, or result from some disease of the air-passages.

Symptoms.—Fever, thirst, sore throat, cough, loss of appetite, difficult breathing, pain in swallowing, and at times flow of saliva. The glands swell, are hard and painful, and impede breathing.

TREATMENT.—Mercurius is the main remedy, and is usually sufficient; put the powder upon the tongue dry, after having sponged any undue saliva from the mouth.

Belladonna should be given alternately with mercurius if local inflammation is severe, or the brain is affected. If there be much fever, use aconite. Foment the glands with hot water three times a day, and apply hot bran poultices, always wiping the part dry after fomen-



184. SEAT OF MUMPS.

a, Large Salivary Gland; *b*, the Duct of the same; *c*, *d*, *e*, *f*, *g*, Muscles of Mastication.

tation or poulticing. If suffocation is threatened, ice should be used freely externally, and small pieces be put into the mouth. In extreme cases of suffocation it may be necessary for a surgeon to open the windpipe.

SORE THROAT.

By this is meant an inflammation of the back part of the mouth, usually coming on from a like affection of the larynx. It is of common occurrence in horses which are put upon work with unusually good food, and in those which are taken from outdoor life and put into warm and poorly-ventilated stables, this change reducing the system and so making the animal liable to cold when exposed in severe weather.

Symptoms.—A cold comes on with fever, thirst and loss of appetite, followed by quick breathing; external swelling of the throat; dry, hard cough; salivary glands swollen, hot and tender; difficulty in swallowing, drinking-water perhaps escaping from the nostrils during attempts to swallow it; the mouth afterward gives out a frothy fluid; the cough becomes loose and discharges come from the nose.

TREATMENT.—Good general care is often all that is needed; but if it be a severe case, active measures should be taken, because there is a danger that the inflammation will extend to the bronchi and so produce bronchitis. Aconite given in ten-drop doses *at first* will often effect an immediate cure. The advanced stages, marked by more settled inflammation, swollen and tender glands, stringy saliva, discharges at the nose, and difficult and painful swallowing, require belladonna, ten drops every four or six hours being suitable. Mercurius may be given in doses of ten grains of the powder every three or four hours, alternated with belladonna, when both remedies seem to be indicated. The following has often been beneficial:

Extract of belladonna,	4 drachms.
Tannic acid,	1 drachm.
Bi-sulphite of soda,	4 drachms.
Syrup,	5 ounces.

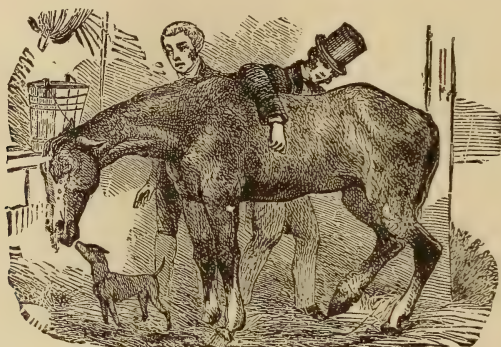
Mix.

Rub on the back teeth a piece as large as a hickory-nut two or three times a day. In case of external swelling and tenderness, use hot fomentations on the throat three times a day, with hot-bran poultices following. Steam the nose as in Catarrh. Keep the stall well ventilated and give oil-cake or oatmeal gruel and cold water. Remember that foul air in the stable, as from poor ventilation, putrid and urine-soaked dung and litter, is a prolific source of sore throat.

INFLUENZA.—EPIZOOTIC.

Under these names we shall treat influenza in general, so interpreted as to include the epizootic scourge which raged so widely and so fatally in this country in 1872, and has appeared in less violent forms at different times since then. By treating the latter we cover the field of the former. That this influenza is borne from one place to another by diseased animals can scarcely be questioned; but that it is also communicated by the atmosphere admits of scarcely more doubt. During its prevalence the human family has been afflicted with a disorder so similar to it that many have thought that man can take it from the horse.

Symptoms.—The symptoms are numerous: First, loss of appetite; then the horse becomes indifferent in manner; fever, with rapid weakening; quick, soft, weak pulse; short, dry, catarrhal cough; breathing sometimes



185. A CASE OF CONFIRMED INFLUENZA.

hurried, sometimes difficult and painful; signs of pain during a fit of coughing; the nose and mouth show a yellowish-red mucous membrane; mouth dry and hot, with drooping lips; the eyes have drooping lids, and are sunken, with inner membrane of lids yellowish-red; swelling and dryness of the eyes and nose; swollen throat; skin dry and hot; coat staring in severe cases; heaving flanks; scanty, high-colored urine; costiveness; dry dung; sometimes cold extremities. Soon the pulse is more rapid and weak; the cough becomes looser but more pronounced; the membranes of the eyes, nose and mouth discharge an irritating fluid, afterward becoming thick, stringy and mattery; the eyelids swell and tears flow; the mouth fills with frothy, very offensive mucus; even swallowing water is sometimes painful; loud, frequent and painful cough; increasing weakness; slimy evacuations; external swelling at the angle of the jaws and between the jaw-bones,

causing pain in swallowing. Though these symptoms may not all be observed, all cases will show more or less dullness and lack of energy, with staggering gait and dragging legs. The nasal discharge, at first thin and scanty, becomes thick, yellowish or greenish, and blood-stained, perhaps coming away at irregular intervals in chunky masses, even in enormous quantities, sometimes filling up the nostril and occasionally giving off an offensive odor, the sense of smell in the animal being impaired or wholly lost. Should pneumonia or bronchitis ensue, the horse braces the fore feet, trembles, and breathes with increased difficulty. Some of these symptoms may be more prominent at some times and places than at others. At any rate, the animal is rendered unfit for service for a considerable time, even after the symptoms have subsided. Any chronic complaint will be aggravated by this disorder; temporary blindness may result; there is a liability to serious inflammation of the bronchial tubes and other vital parts; hence the urgent importance of careful attention from the beginning.

TREATMENT.—*Mild* cases require rest, a warm, light, dry stable, thoroughly clean, blankets being used if necessary to keep the animal warm, wet feed, exercise, not faster than a walk; but medicine is unnecessary. In *aggravated* cases, select from the following remedies according to the symptoms. *The first day or two*, for short, dry cough, quick, strong pulse, quick, short breathing, shivering, thirst, loss of appetite, uneasiness, thin, transparent mucous discharge from the nostrils, give aconite in ten-drop doses every two hours. As the disease progresses, belladonna will be found valuable for drooping head; languor; dull eyes; short, dry cough, *made worse by pressure on the windpipe*; thick, white discharge from the nose. It should give place to another remedy when the cough becomes loose and the nasal discharge yellowish. Ammonia carbonate is needed for inflammation of the nasal membrane, either dry or with a discharge, which may be bloody; stoppage of the nose; sore throat; languor; dry cough, especially at night; swollen throat. The remedy is especially good for over-worked horses. Arsenicum is an invaluable remedy if there be great debility; burning, corroding nasal discharge; dry cough, made worse by cold air, and more pronounced *after midnight*; dry mouth; thirst, with little water taken at a time; profuse watering of the eyes; fever worse *after midnight*. It is indicated too in case of languor, restlessness, short breath, with panting, much weakness, and in the later stages is de-



186. APPLYING FUMES TO THE NOSE.

manded by cold extremities, with dropsical tendency. Tonics are often necessary, and *nux vomica* will give relief if there be profuse nasal discharge; drooping head; languor; repeated dry, hard cough, worse from trotting, and often attended with passing of wind from the bowels; weakness; trembling; cold legs; lying down much. It is usually better to give this in alternation with arsenicum, at intervals of three or four hours, or with quinine in five-grain doses. Phosphorus is especially suited to cases, after the primary symptoms, in which the nasal discharge is profuse, thick, greenish, and perhaps offensive; the cough dry, hollow, hoarse and painful, made worse by dust, cold air, strong-smelling urine, or pressure on the windpipe; rapid loss of flesh; lung-complications. If very stringy, thick, white or yellow mucus be discharged from the nose, or expelled by coughing, give *kali bichromicum* every one or two hours, one grain ground into sugar until thoroughly mixed being a suitable dose. The bowels should be kept free with bran-mashes, linseed or olive oil, and in case of great weakness stimulants and tonics should be used, among which we may mention carbonate of ammonia, colombo, gentian and cinchona. *Rest is imperative.* Even strong horses recover much more readily and completely if relieved of work, though in good weather the animal should be gently exercised. Keep the stable thoroughly clean and well ventilated, and provide clothing and warm bedding in cold weather. If the legs be cold, thoroughly rub them three times a day and wrap them comfortably when the weather is cold. The burning of tar in the stable may be of benefit, especially if some of the above remedies are administered. The fumes of burning tar or leather so used as to surely enter the nostrils will excite the membrane to action and thus facilitate the clearing of the nose. They may be applied by the use of a steaming-bag. The rubbing of liniment on the throat is of doubtful value, though this may serve a purpose in the absence of specific medicines. The best of such liniments is hartshorn. Give hay sparingly in mild cases, but avoid it in bad ones. Warm bran-mashes with *tepid* drinking-water are the best in severe cases. Boiled potatoes and turnips and raw apples are good. Corn meal soaked in hot water, in small quantities every few hours, is strengthening, and suited to late stages.

PINK-EYE.

Pink-eye is epidemic in its character, much the same as the epizootic considered just above, though not so fatal. It is a fever and not a cold, as many suppose, though it is sometimes attended with influenza.

Symptoms.—The symptoms are easily detected: The horse becomes dull and moody, with hanging head; the eyes become red and swollen, the

whites taking on a pinkish hue; the entire head is more or less swollen; the swelling extends to the legs as the disease progresses; there is a slight watery discharge from the nose; the mouth is feverish, and the irritation extends to the lungs in many cases.

TREATMENT.—Insure rest, taking the horse completely from his work and giving only moderate exercise on fair days. Provide soft, clean bedding, and blankets in damp, cold or stormy weather, or if the animal is chilly. Give a regular diet of bran-mashes and good hay. This course will often, if not generally, be sufficient, but the internal remedies mentioned for Influenza may be selected and used with profit in many cases.

WEED.

This consists in inflammation of the glands of the legs. The lymphatic glands, which carry the dead matter of the body to the excreting organs, become weakened or overtaxed, and hence become clogged and swollen, and then they impart their trouble to other glands. It is frequent in cart-horses, especially when they have rested a day. It is caused by unwise feeding, especially changing from poor to good food, by over-work after continued rest, by exposure to cold and wet, by standing in water, and it is usually of a hereditary tendency.

Symptoms.—The symptoms are at first the usual ones of fever. Occasionally the fore legs are attacked, but usually the hind ones, and of these most often the left. The horse raises his leg often as if in pain, and it will be swollen inside down to the hock or even the fetlock. The part is hot, extremely tender and painful. On the inner side of the leg and thigh is a hard enlargement of the glands, with lumps at intervals. The breathing is more rapid and the pulse rises to sixty or ninety. In extreme cases a fluid oozes from the skin and stands in drops on the hair. One attack predisposes to another and these are apt to permanently enlarge the leg.

TREATMENT.—Aconite should be given for feverishness, tenderness, swelling and heat, ten drops every three hours. Give iodide of mercury in one-grain doses when the glands are swollen and the secretions are sour and offensive; also when the disorder is brought on by cold, damp, draughts of air, or unfavorable changes in the weather. If the disease continues and there is a tendency to a chronic state or to sloughing and abscesses, iodide of potassa will be found useful, ten grains three times a day, well diluted with water, being a proper dose. A paste of iodine may be rubbed on the swollen glands, or the tincture of the same may be applied after the inflammation has somewhat subsided. Rhus both internally and externally has been found efficacious if weed is the result of getting wet or cold when sweating,

and the glands are hard and tender. When the acute symptoms have abated, and the dropsical swellings, poor appetite, emaciation, prostration and suppression of urine continue as the principal symptoms, give arsenicum. Use hot fomentations for an hour, four to six times a day. Except during the acute stages, in which the horse should be at rest, only light work or exercise should be imposed, dry bandages being applied with pressure to the limb after such work or exercise. Guard against the causes named above.

STRANGLES.—DISTEMPER.

This disorder is more common in colts and young horses, but is occasionally found in mature and old animals. Among the more probable causes is teething or some disorder of the teeth, changeable weather being a favorable condition to its occurrence, as is also a change from the field to the stable, or from idleness to activity. The disease attacks the same animal but once. The colt may be on pasture and require no treatment, but it is always best to give it care at once, since suffocation is liable to occur.

Symptoms.—Among the first evidences of its presence one will often notice a general unthriftiness, loss of condition, dullness and langour, though these will not always be noticeable. Then a cough ensues, with an offensive yellow discharge from the nose; saliva sometimes profuse and stringy; swelling of the glands between the jaws and at the throat, rendering chewing and swallowing painful; this swelling gradually increases, and sometimes pus forms under the throat, finally bursting and discharging; when drinking, water may flow out of the nostrils; the horse becomes feverish and loses his appetite; great thirst, with inability to drink because of pain in swallowing; spasmodic coughing attends an attempt to drink. The swelling at the jaws may be hard and keep up the disease for a long time. Or it may disappear and be followed by formations of pus in the shoulders, groin, lungs, intestines, brain, or other part, producing serious or fatal effects.

TREATMENT.—Give ten drops of aconite every four hours when there is an appearance of common cold, the horse being feverish, restless, dull and uncomfortable, with a dull, staring coat, dry, hot mouth, occasional cough, swollen glands about the jaw, quickened pulse, and loss of appetite. Six drops of belladonna may be given in water or on sugar once in three hours when the back part of the mouth is dry, red, and inflamed. If there be constipation, give nux vomica every third hour until the appetite is restored.

Great relief may be afforded by putting into a pail equal parts of vinegar and water, placing a hot brick in the dilution, and holding the pail in such a way that the steam will be inhaled. It will often prove so grateful that the horse will put his nostrils within reach of the steam of his own

accord. The steaming-bag is also useful (see cut 186). It may be best to aid the formation of matter between the jaws if the swelling has advanced considerably. To do this, bind on a poultice. When the swelling has fully pointed or "gathered," open it and let the matter escape. It is of the utmost importance that the strength be sustained by tonics and an abundant supply of soft, nourishing food and pure air. If hot mashies are fed from a close nose-basket hung on the head, the steam will afford much relief, while the food does as much good as if otherwise taken. Other disorders are liable to set in along with strangles, and they should be treated as directed.

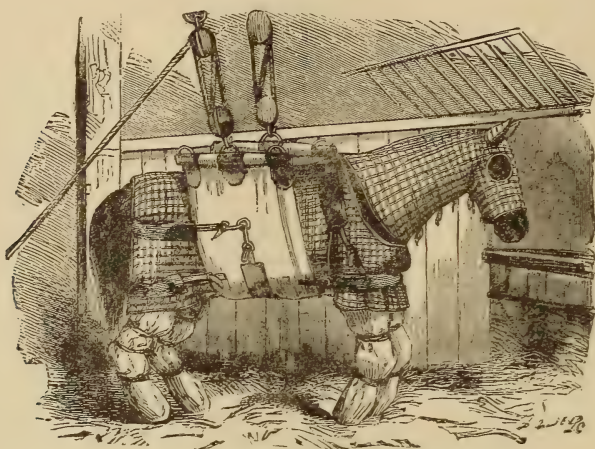
RHEUMATISM.

This is an inflammation which shifts from one part to another, with sudden, painful attacks, and usually affects the limbs, chest, and loins. When the sides and heart become affected, recovery is more doubtful. It usually results from neglect, the animal being exposed to cold and wet, or standing in water when warm. Bad food or whatever lowers the vitality will produce it. It becomes chronic after repeated attacks, and then the swelling of the parts becomes permanent.

Symptoms.—Shivering at first; then the mouth and skin are hot, followed by marked stiffness and pain. If the shoulder be affected, the horse rests the toe frequently on the ground; if the loins, the back is raised and the belly drawn up. Swelling and heat of the joints and tendons of the limbs ensue, especially about the fetlock; usually fever; furred tongue; pulse seventy to eighty, but variable; sour saliva; active bowels; heaving in the flanks; short, rapid breathing; free, acid sweats; warm skin and legs. In a disease of the foot, with which rheumatism of the shoulders is often confused, there is a difficulty in *putting the foot to the ground*, while in the latter there is difficulty in *lifting the foot*. When the trouble shifts rapidly from part to part, it is called "flying lameness."

Treatment.—Aconite is needed for shivering; fever; local inflammation, tenderness and swelling; hot mouth and skin; sweats on parts of the body; full, rapid pulse; high-colored urine; impaired appetite. This remedy is especially efficacious if there is danger that the rheumatism will shift to the heart, in which case ten drops should be given every hour for several doses. The following conditions call for bryonia: acute attacks, especially in the legs, shoulders and side; reluctance to move; pain aggravated by motion; full, frequent pulse; short respiration; loss of appetite; thirst; costiveness, with dry passage; high-colored urine. It is particularly useful for attacks induced by changes in the weather, by wind or dry, cold air, and it is one of the best general remedies for rheumatism. It may

often be beneficially alternated with aconite. Rhus should be given if there be stiffness and pain on *first moving* after rest, but relieved by motion. It is especially valuable for rheumatism of the back; loss of muscular power of the legs; chronic rheumatism; cases that are induced by over-exertion and exposure to wet when tired; and this is also valuable when the tendons are chiefly involved. Cimicifuga is needed for swollen, heated joints; pain from motion; "flying lameness;" heart-complication; rheumatism which attacks the sides. Gelseminum is valuable for *loss of muscular power*; acute pain after long exertion; coldness and weakness of



187. SLING AND DRESSING FOR RHEUMATISM.

the legs; excessive action of the heart; cases that are worse at night. Phytolacca is efficacious in chronic rheumatism, with enlargement of the glands. Colchicum, muriate of ammonia and nitrate of potassa will be helpful in many cases.

In the way of general care, protect the animal from cold and inclement weather; keep the stable warm and dry, putting on warm, dry clothing in damp, stormy, cold, or windy weather. Put hot fomentations and liniments on the affected parts, especially on swollen joints. Among the liniments we may mention, as being useful in general, soap-liniment and lotions of rhus and belladonna. Cornmeal and bran will make good poultices for enlarged glands and inflammations. Perhaps the best local application for the affected parts is flowers of sulphur, rubbed on and then covered with a thick layer of cotton-batting. Indeed, dry cotton-batting alone is one of the most grateful and useful of all applications and great relief will be afforded by keeping the affected members wrapped in it.

Keep the horse quiet, but allow him to move when so inclined. In severe or long-standing cases, when the animal is unable to stand or lie down without much pain, it will be best to devise a sling and pulley to relieve the limbs of their burden. Give bran-mashes, carrots, clover, and milk-gruels. Care for the general health is the best of known expedients, especially in chronic rheumatism, and is the best preventive.

CRAMP.

Symptoms.—In this disorder, which is a pain and knotting of the muscles after severe or long-continued exertion, the horse is sore and stiff; shows tenderness on pressure of the muscles, with difficulty and pain in moving the legs; hesitates to lie down, then drops suddenly, with a similar difficulty in rising; evinces but little change in appetite, pulse or respiration.

TREATMENT.—Arnica should be given immediately after any lengthened or severe exertion which demands great muscular efforts, a dose every four hours; it will act both as a preventive and as a cure. Rhus is preferable after the specific symptoms have appeared and the horse is stiff and sore. Brisk rubbing followed by the application of bandages on the limbs is often all that is necessary to give the required relief.

GLANDERS AND FARCY.

Farcy consists in sores incident to glanders, and is not a separate disease. The two constitute one of the most loathsome and fatal diseases of the horse, which is very highly contagious, being imparted to some other domestic animals and to man. It is some form of blood-poison, and may be taken from contact of the virus with some broken or irritated part of the skin, or by absorption from the air, and the poison is lasting, the virus retaining its potency after lying in a stall for months. Occasionally a sound horse is found which will not take the disease. The virus is more dangerous when in food than in water. One horse often gets the disease by being with an affected one, or in his stall, or contracts it from a man who has been handling a horse so diseased. If the animal has been in any way reduced in his system, he is made more liable to the disease, and catarrh, strangles, and other disorders may terminate in glanders.

Symptoms of Glanders.—The *first* symptoms of glanders are these: Quick pulse and breathing; feverish excitement; a thin, inodorous, transparent discharge, generally from one nostril, usually the left, the right being less affected; light leaden or purplish hue in the mucous membrane of the nose. This set of symptoms may last weeks or even months, with the

horse in apparently good health and at his usual work. In the *second* stage, the remaining nostril becomes much affected, the discharge is greater and is mucous and sticky, adhering to the edge of the nostrils; the lymphatic glands beneath the jaw are enlarged, first on the side first affected, then on both sides, are tender and hard, and stick close to the jaw. In the



188. PROOF OF GLANDERS.
1, Normal Nasal Membrane. 2, Membrane with Ulcers.

third stage, the discharge from the nostrils increases, is hard, yellow, perhaps blood-streaked, of offensive odor and mingled with pus; blood sometimes comes from the nostril; the mucous membrane of the nose has ulcers with ragged edges and low centers, which are marked by swollen veins running from them in all directions; the sores spread back to the throat; the lower eyelid becomes diseased, slightly swollen, a small discharge of matter coming from the corner of the eye; after a time, loss of appetite, strength, flesh and spirits; the swollen glands under the jaw become more tender and adhere closely to the bone; skin "hide-bound;" legs, sheath and testicles swell

during the day, becoming reduced at night; lameness; the hair turns the wrong way; ulcers in various parts of the body. These stages will be quite well marked in most cases.

Strangles, pneumonia, distemper, and other disorders are also marked by the sticky discharge, nasal ulcers and swelling of the glands beneath the jaw, but usually show these symptoms about the same time, thus differing from glanders. In the last also these are slow and eventually fatal, while in the other cases they are acute, rapid, and then subside. In catarrh the discharge from the nose, which in glanders is more marked in one nostril, is free in both nostrils, with prominent fever-symptoms. In lung-troubles some of the symptoms of glanders appear, but in the latter there is rarely any cough, while in the former a cough is nearly or quite always present.

Symptoms of Farcy.—On the inside of one of the legs or thighs, on the thin skin of the neck or lips, or on the glands, may be a sore which will afterward grow into a hot, painful "farcy bud," at first hard, then soft and containing pus. This sore will burst and present a depressed center, a hard, ragged edge, with discharges of pus; the connecting lymphatics become inflamed, hard and corded, with tumors of varying size along them. Though at first confined to one leg, the tumors spread to other parts, reaching the head and throat. Then the skin becomes dropsical, as also the leg, especially near the breast. After a time the joints give forth a sound as if the bones were slipping in the sockets. One is apt to confuse farcy with

grease, surfeit and weed. The subjoined tables of symptoms will enable one to distinguish it from the first of the three.

FARCY.

1. Skin moderately inflamed, not very red, nor glossy, nor subject to discharge.
2. Swelling somewhat sudden, but not great, largest above the hock.
3. Along the course of the inflamed lymphatics ulcers are formed, having an irregular circular shape and hard edges.

GREASE.

1. Skin hot, very red, glossy, with clear and very acrid discharge.
2. Swelling very great, especially at the lowest part, spreading in all directions, but chiefly downward.
3. On the heels clusters of small vesicles arise, which become pustular and exude an acrid discharge, which causes the skin to crack in deep fissures.

In surfeit the sores come out *suddenly* on different parts, while in farcy they appear one by one. In weed the large *vein* on the inside of the thigh is affected, whereas in farcy the *lymphatics* on either side of this vein are swollen, hard and corded. In general, the "farcy buds" are the decisive marks of farcy, whether on the legs or body; and when they affect the nose, they constitute true glanders.

TREATMENT.—"The acute disease is fatal. The chronic form occasionally appears to recover, though more commonly the symptoms are covered up to reappear whenever the animal is put to hard work. The treatment of glanders in all its forms, and of acute farcy with open sores, should be legally prohibited because of the danger to man as well as animals." (LAW.) The writer's first and urgent advice is to shoot the affected horse as soon as he is known to have the glanders or farcy. Where legal restrictions against treatment of the disease exist, the course of the attendant is clear. If the horse is so valuable that the owner, in the absence of such restrictions, prefers to attempt the treatment at the risk of communicating such a dreadful disease to members of his household, to his neighbors, and to domestic animals, he will be assisted by the following notes.

Carbolic acid is useful for both its internal and local effects. Mix ten drops of the strong acid in a pint of pure water and administer this internally in four doses six hours apart. Put twenty drops of the same strong acid in two pints of pure water, and frequently wipe out the nostrils with this dilution, using a syringe if the affected parts are otherwise beyond reach. Cleanse the ulcers and "buds" with the same, and bathe with it the disordered lymphatics, keeping cloths on the farcied parts moistened with this dilution, if this be practicable. When moistening the sponge and cloths with which the nostrils or other parts are to be treated, *pour* the liquid on them, so that what is in the vessel will be pure. Kali bichromicum may

have a good effect when the discharge from the nostril is grayish and sticky, or like the white of egg; the nasal membrane of a slate-color, with elevations which contain pus; the gland under the jaw adhering to the jaw, or enlarged. Dissolve one grain of the drug in twelve ounces of water and give a wineglassful of this three times a day. If the farcy buds be washed night and morning with a lotion of one drachm of the salt of the same drug in sixteen ounces of water, good results may be expected. Doses of five grains of arseniate of strychnia are highly recommended. Iodide of arsenic will have a good effect if given three times a day as soon as the "buds" have become full of pus, or when ulcers appear, or when there are no inflammatory symptoms. If this remedy and kali bichromicum appear to be indicated at the same time, they should be given in alternation, and such alternation will be especially valuable when farcy and true glanders exist at the same time, the horse becoming poor and weak. Bisulphite of soda in two-drachm doses is a good general remedy for glanders.



189. FARCY ON THE INSIDE OF THE THIGH.

When the farcy buds become soft, they should be opened with a sharp knife and a lotion be injected into them composed of five grains of chloride of zinc and one ounce of water. If the wound is not inclined to heal in a day or two, repeat this injection in two or three days. Ulcers may also be washed once or twice with this lotion, and be subsequently cleansed with strong salt-water four to six times a day if a cure is not effected. After washing the sores with salt-water, apply equal parts of flour and pounded charcoal three times a day, if the former treatment has not succeeded. A thick layer of calomel is also efficacious when the sores are slow about healing. Keep the horse clean and give moderate exercise or light work. The best of hay and a moderate allowance of oats, with carrots and other green food, will be a

suitable diet. Keep the stable clean, airy but not cold, change the bedding often, and use carbolic acid freely in washing the floor. Pure air, rich food, and an absence of exhausting labor are essentials in the treatment and prevention.

To prevent the spread of this dreadful disease, which is usually fatal however well treated, the best plan is to shoot the horse and bury him deep in the ground—it is still better to burn him—and no other course is free from danger to man or beast. Remember that a heavy penalty is incurred in some States by exposing glandered horses in a public place. All suspected animals should be carefully secluded until they are safe from infection, or have been cured or destroyed. All rags, sponges, brushes, pails,

and like articles which have been used in treating a glandered horse should be burned, as that is absolutely safe, though a thorough washing with carbolic acid may counteract the virus. The stable, manure, and whatever the infected animal has touched, should be thoroughly treated with carbolic acid, the bedding being burned. Let the attendants be as few as can do the necessary work. *Never handle a glandered or farcied horse if the skin of the hands is sore or broken*, for man may readily take the disease and suffer distressingly if not fatally. Always wash the hands in dilute carbolic acid after treating an infected animal, and before going near other people or beasts. If the clothes have the virus on them, or if doubt exists as to this, they should be washed in the same way. Keep well animals of all kinds completely away from an infected one. Every one who is to go near the suffering horse should be fully advised upon the virulent nature of the disease, and take the necessary precaution against contracting it.

DROPSY.

The cause of dropsy is some obstruction of the circulation, or a diseased state of the blood, with general reduction of the system. It is called *general dropsy* when it causes a collection of watery fluid under the tissues of the skin generally, *hydrothorax* when it affects the lungs merely, and *ascites* when the belly or intestines are involved. *General dropsy* is caused by exposure to wet and cold, as when a horse is turned out of a warm stable to a marsh, or to pasture in cold weather; the coating processes of spring and autumn are causes, as well as derangement of the heart. *Hydrothorax* is occasioned by general weakness, by fever-epidemics, as influenza; and also results from the unwise operation of bleeding. *Ascites* has the same causes as general dropsy, and is also a result of diseases of the belly, chest and membranes about the small intestines, indigestion, obstruction of the veins, and general debility; it frequently results from peritonitis.

Symptoms.—The universal symptom of dropsy is swelling of the skin, which retains for some time indentations of the fingers, and is attended with great weakness, with absence of inflammation and pain; fever-symptoms, at first slight, become marked. If *hydrothorax* results from pleurisy, when acute symptoms subside the motion of the water in the chest may be clearly detected by striking with the hand; the animal loses appetite, grows languid, depressed, weak, and has an anxious look; the back is rigid, flanks drawn in, hair rough and easily pulled from the tail and mane; pulse rapid, feeble, and finally imperceptible at the jaw; nostrils spread; eyes, mouth and nose of a leaden color; breathing short and very labored; fore legs stand apart; urine scanty, bowels bound; swellings over the limbs,

belly and sheath. In *ascites* the belly gradually swells so that alternate and rapid pressure by the hand on the sides will produce fluctuations of water and a dull sound; breathing becomes difficult as the water increases; usually external swellings of the belly and sheath follow; coat dry and loose; urine thick and sedimentous; skin hide-bound; griping pains; the usual costiveness is followed by diarrhœa, with offensive dung.

TREATMENT.—Give aconite for inflammatory general dropsy, when the swelling comes on suddenly and rapidly spreads, with hastened breathing and pulse, thirst, reddening of the eyes and nostrils; and also if this condition results from a sudden check of the secretions of the skin from exposure to wet or cold. Arsenicum is of the highest value in all forms of dropsy that are marked, in addition to the swelling, by weakness, emaciation, loss of spirits, great thirst, loss of appetite, dry tongue, difficult breathing, small, weak and irregular pulse, cold legs, scanty and turbid urine, and diarrhœa. Digitalis may be given when the heart is implicated and the pulse is small, feeble, intermittent and irregular, breathing difficult, and urine scanty. It is useful in almost every kind of dropsy, even in desperate cases, and may often be beneficially alternated with arsenicum. Apis is highly useful, especially when fever-difficulties are present, such as hurried breathing, small and quick pulse; for passages of urine which forms a reddish sediment and for rapid swellings. It is particularly valuable for ascites in the first stages, and is also useful for hydrothorax. In the general care measures should be taken to avoid cold, dampness, and vigorous exercise, though a little walking for an hour may be given, if no fever-symptoms exist. Let the horse take exercise in a loose box during inflammatory dropsy, and give mashes of green food; but barley, boiled oats and the best of hay are needed if there be much weakness. Tapping should not be resorted to until a fair trial of medicines has been given. This operation is performed in ascites by cutting the navel with a lancet, the fluid being drawn with the trocar and canula, the skin drawn over the cut, and pressure applied with bandages. In other forms the swellings may be pricked in the parts hanging down the most, the discharges being subsequently promoted by fomentations and pressure applied to the parts.

SPLENIC FEVER.—ANTHRAX.

This fever is acute and contagious, is marked by a great enlargement of the spleen, and is rapid in its progress. It is caused by the contact of an infected animal with one that is healthy. It is more common among cattle than among horses. For fuller notes upon its different forms, see this disease in the Ox.

Symptoms.—Loss of appetite; thirst; cold and shivering; coldness of the surface, followed by heat; convulsive movements and peculiar spasms about the extremities; pulse and respiration quickened; temperature from 105° to 110° ; bloody dung; whitish discharge from the nose; high-colored, odorous urine. Though the symptoms are usually regular, they may be intermittent, the horse being seemingly almost well during their intermissions. Recovery or death comes on rapidly. In fatal cases the breathing is exceedingly difficult, the convulsions in the back, loins and muscles of the eyes are violent; the temperature falls; loss of power ensues, and death is precipitated by a suspension of circulation. Carbuncles attend this fever, and are at first hot, tender, and easily indented, but soon become hard, painless and cool, terminating in ulcers. Yellow serum or blood may exude from some parts of the skin; the mucous membranes become puffy, stopped up, or streaked, with a bloody and offensive discharge finally coming from the nose. Sight, locomotion, eating, drinking and urination become impaired or impeded. Death may ensue in a few hours, or the animal may linger weeks, or even months. During the progress of the disease the animal hangs on the halter, leans against any object within reach, lies down, but soon rises again, turns the head toward the flank, and shows signs of pain in the belly.

TREATMENT.—If symptoms of fever are chiefly noticeable, give ten drops of aconite every half-hour. For the general fever give one part of strong liquor ammonium causticum to ten of water every half-hour. For apoplectic symptoms belladonna and aconite may be used, fifteen or twenty minutes apart. For local swellings and carbuncles give arsenicum or phytolacca. If the dung becomes bloody, with straining during the discharges, and if the urine be bloody, give mercurius corrosivus. In the way of general care give a change of air, a comfortable stable and nutritious food. Remove an animal dying from this trouble, and cleanse the stall and all its furniture before admitting another horse. Carbolic acid has proved serviceable as a preventive. Further directions as to general care may be found under the treatment of this disease in the Ox.

PURPURA HÆMORRHAGICA.—ACUTE ANASARCA.

This depends upon some unknown change in the blood or its vessels, perhaps both, by which the blood oozes into the skin and its tissues, and into the internal cavities and organs. It is supposed to be caused by ill-ventilated stables, over-work, bad or scanty food, damp stables; indeed, whatever checks proper blood-making; it often follows some catarrhal trouble.

Symptoms.—The symptoms are full pulse, about sixty; breathing about twenty; irregular swellings of various size, consisting of blood, under or in the skin, especially in the legs, becoming enormous at the hocks, ending short at the elbow-joints and stifle; the nostrils and lips are swollen,



190. HEAD DEFORMED
BY PURPURA HÆMOR-
RHAGICA.

hard and shiny; the chambers of the nose so far closed as to cause difficulty in breathing; nasal membrane very red and marked with purple spots of varying size, similar spots being on the inside of the lips, which, when pricked, give out blood. Soon the pulse becomes weaker and the urine high-colored; swellings enlarge and extend to the belly, flanks and other parts; eyes blood-shot; the nasal membrane blackens; the spots become ulcerous, with shreds of tissue hanging out; a dark bloody fluid, perhaps mixed with water, flows from the nose; the swellings on some parts become cold, very hard and insensible, break off, and leave raw sores; a fluid stands on the hair, principally under the belly; blood passes with the urine, or in clots; the horse is weak, is unable to move the swollen legs, and eats little, perhaps nothing.

It should be observed that in Weed the femoral vein is enlarged and tender, but not in purpura hæmorrhagica, and that in the former the swelling on the inside of the thigh is hard and not elastic. Again, in Glanders and Farcy there are swollen lips and nose, with a brown, pussy discharge from the nostrils, and ulceration of the dividing wall of the nose; but they are not attended by the sudden swelling of both thighs, without cording, and of the muscles of the chest; nor by the purple blotches inside the lips and gums; nor by the dark purple shade of the nasal membrane after the small red spots. These distinctive features should be carefully noted, for purpura hæmorrhagica is for some strange reason not unfrequently mistaken for farcy and glanders.

TREATMENT.—Kali bichromicum has proved to be a most valuable remedy, especially when sloughing of the mucous membrane of the nose or parts of the skin takes place, and when pimples appear on the skin. It may be given every three hours at first, the intervals being lengthened as the animal improves. Among the best remedies for this disorder we may mention ergot and arsenic, the latter being suitably given in the form of Fowler's Solution. As soon as the inflammatory symptoms subside, or even in the start, when the malignant symptoms are very marked, these two should be given, the former in doses of ten to fifteen drops alternated with five-drop doses of the latter every two hours. Wash the sores with a solution of carbolic acid or chloride of zinc, so far diluted as to avoid irri-

tation. Provide a dry stable, with good ventilation. Give nourishing food. Require but little work, but insure a reasonable amount of light exercise.

ABSCESSSES.

Abscesses are collections of pus in some parts or organs of the body. They may result from some of the diseases or injuries elsewhere mentioned in this work, as fever, for instance, or they may be caused by a disorder in the blood without any apparent previous disease. Some part is inflamed and pus forms, which will either float about in the tissues or be collected in one place, the enveloping sac becoming full and yielding to the touch, and generally rising to a point or "head," finally bursting and letting out its contents. They may and generally do form under the skin, but may occur within the animal, as in the lungs. When they are deep in the flesh the pus cannot readily come out, and a narrow canal is formed which leads to the surface.

TREATMENT.—If the abscess be in the inner organs, an improvement of the horse's general condition is all that one can do, and regard should be had to the feeding, grooming, ventilation and the like. If the abscess can be reached, cut it open at the most prominent point *when it pulsates, is soft and nearly ready to burst*. In such cases it would soon burst spontaneously, but cutting averts the rough, irregular and large opening which the natural process causes. Should it not come to a point, but spread, open at once. If the disorder is owing to the presence of irritating fluids, open immediately and let the fluids escape. If the formation of pus be unduly slow, apply a poultice or mild blister, *but not until the abscess shows signs of coming to a head*. If the sore be deep in the flesh, and a canal has been formed leading to the surface, it will often be necessary to cut the walls of the canal completely open to the bottom, thus making an incised wound, and treating as directed under Incised Wounds. It is seldom, if ever, advisable to check or disperse matter when once forming. When an opening has been cut, gently squeeze out the matter and inject warm water into the sore with a syringe twice daily for two or three days, and keep the edges of the sore clean. If bloody matter is discharged, add some diluted ammonia to the warm water.

For high fever, local inflammation, swelling or tumor threatening an abscess, give ten drops of aconite every two or three hours. If suppuration is slow, give hepar every three hours. For an abscess which discharges a thin, discolored, offensive matter or pus of a bad odor, give five grains of asafœtida three times daily, and apply a wash of either one grain of chloride of zinc to an ounce of water, or ten drops of carbolic acid to an

ounce of water. *Baryta carbonica* is valuable for hard tumors in the head, enlarged glands which threaten to form pus, or tubercles in the jaw; it aids in softening hard abscesses, and also removes scrofulous tumors without suppuration. Abscesses are very debilitating and need good treatment.

ULCERS.

Ulcers often follow bruises and other extended injuries, and take place especially when the system is unhealthy, but may result from inflammation. They are a separation of dead tissue from surrounding parts, and are attended with a secretion of pus. If the ulcers appear on a mucous membrane, there will at first be seen a red point or two, with a few small vesicles on the surface of the part affected, a watery fluid exuding from beneath, and sometimes a thick, gray, slimy lymph. The ulcer grows larger as parts of the tissue come away, its edges becoming ragged and swollen. It may be deep, extending in different directions; round and shallow, with ragged edges, and spreading out; or sloughing, parts of the tissue flaking off.

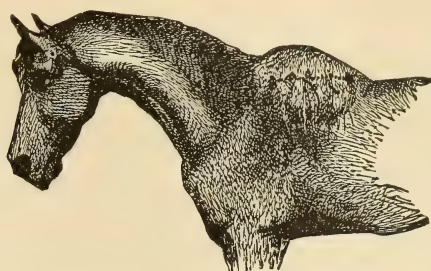
TREATMENT.—Have regard to the general health by insuring nourishing food, fresh air, good grooming and rest. Nearly always avoid the use of ointments. Plain cold water is the best external treatment. If the formation of pus is too long delayed, press around the sore lightly, and should this not avail, use a mild blister somewhat frequently. Should the granulations be excessive in the healing, apply lunar caustic or powdered burnt alum. If the injury results from chafing of the saddle or harness, follow the treatment given under Galls. For fever, give ten drops of aconite every three hours for a day or two. *Mercurius* is needed for spreading ulcers, corroding discharge, and rawness. *Arsenicum* is demanded for ulcers which result from a debilitated constitution, hard work, and poor fare; for deep, readily bleeding, inflamed, putrid, gangrenous, corroding, mortifying and spreading ulcers; for those with thin pus of bad odor. Give five to ten drops three times daily. *Asafœtida* is desirable for bluish ulcers, turning black, with hard edges, and painful to the touch, the dose being three to five grains three times a day. Ten drops of sulphuric acid every four hours will be beneficial for ulcers with dark spots and discolored skin when the cause is some mechanical injury, bruise or pressure.

FISTULA.—FISTULOUS WITHERS.

In this disease matter forms from an inflammation caused by a badly-fitting collar or saddle, usually a side-saddle, or other injury. The matter

is confined in the muscles and ligaments, forms canals, and passes down to the muscles connecting the shoulders with the trunk. Sometimes, however, the abscess takes the form of a sac with serum in it, when the case is easily cured. In the worst form, the muscles connected with the neck, back and legs being involved, the inflammation rapidly extends, the ligaments, muscles and cartilages are affected, the shoulder is lowered, and much damage occurs.

Symptoms.—Swelling and tenderness on the withers or at the side of the upper end of the spine, soon attended with softness. If the skin be much bruised, a piece comes off, leaving an unhealthy sore, through which



191. ADVANCED STAGE OF FISTULOUS WITHERS.

a discharge runs out from a sac that may be detected with a probe; or fistulous ducts may run in various directions. In some cases there is a hard tumor on the withers which stubbornly remains, but will not suppurate.

TREATMENT.—First alter the saddle, or keep the horse from work a few days. If the swelling be recent and soft, apply a lotion of arnica and glycerine with lint and oil-silk until the inflammation subsides. If the tumor bursts or is cut open, bathe it with a lotion of one part of arnica to two of water. If a serous sac or fistulous canal exists in the swelling, it must be opened for the escape of the matter. Generally it is best to make the opening low down on the right side, since the horse usually lies on that side and the matter will more completely be discharged in this way. After the opening has been made, dress with a lotion of calendula, one part to four of water, four times daily and inject some of the same into the canals, if such exist. If the walls of the canals thicken, become hard and indisposed to heal, zinc, copper, or mercurius corrosivus, in weak solution, should be injected until renewed action is set up; then the calendula-lotion will complete the cure. If the bone is involved and decays, it should be removed by a surgeon. Of course only a skillful surgeon can make the opening in the canals if they be deep down in the fleshy tissues.

FISTULOUS NOSE.

Wounds sometimes produce ulcers in the back part of the nose, perhaps inducing ulceration of the bones which discharges a thin, unhealthy, pus-like fluid, such ulcers being of a fistulous character.

TREATMENT.—Apply to the fistula a solution of carbolic acid, ten drops to an ounce of glycerine. Wash well with soap and water. The following formula will be useful if the fistula does not heal but remains unhealthy:

Hydrastia,	20 grains.
Iodoform,	10 grains.
Sugar,	$\frac{1}{2}$ ounce.

Pulverize together in a mortar until they are thoroughly mixed; then apply to the fistula once a day, blowing it from a quill.

POLL EVIL.

Poll evil results from some blow on the top of the head, or from a coarse, heavy head-collar chafing the part.

Symptoms.—Hanging head, the horse being unwilling to be handled about the ears; painful swelling just back of the ears on the top of the head, at first hard, then growing soft, of the nature of an abscess, gradually coming to a head, bursting, and discharging matter, which is sometimes healthy, in other cases, when the ligaments and bones are involved, unhealthy and offensive. The probe will detect a single cavity, without canals, or canals passing in different directions, perhaps extending to the bone.



192. POLL EVIL IN AN EARLY STAGE.

TREATMENT.—This disease is very difficult of treatment except in the earliest stages, when it may be checked by removing the cause and applying arnica to the part. The formation of matter should be prevented if possible. When this can not be done, cut open the hard, painful swelling (*if you are a skillful operator*), and apply lint saturated in equal parts of glycerine, calendula and water, oil-silk being put on then, and a linen hood with openings for the ear being fastened on with tapes around the jaw and neck. Moisten the linen three times daily with the lotion. Should the tumor become soft and mobile, a surgeon should at once open it, in such a way, if possible, as to allow the matter to

run out. If matter still remains, it may be removed with a sponge. When canals exist where the surgeon deems it unsafe to make an opening, and a thin, bloody discharge comes off, indicating diseased bones and tendons, a weak solution of corrosive sublimate or of chloride or sulphate of zinc should be injected daily. When the matter becomes thick and white, calendula-lotion may be injected instead of the corrosive sublimate or zinc. When there is a low state of the system, tonics should be given, as iron and cinchona. When such a state is accompanied by a thin, foul, bad-smelling and corroding discharge, give arsenicum. Aconite is needed for primary inflammation, ten drops of dilute tincture being put in a pint of water and given two or three times daily until the inflammation subsides.

WOUNDS.*

The whole subject of wounds may be treated under this general head. We divide the matter into four groups, namely, *contused* wounds, *incised* wounds, *punctured* wounds, and *lacerated* wounds.

CONTUSED WOUNDS.

By this term we mean those in which the skin is bruised, but not cut through or broken. They are caused by some mechanical violence, such as a halter accidentally caught around the leg, a fall, a kick, or a blow. The symptoms are redness, heat, swelling and pain of the affected part.

TREATMENT.—In mild cases wet two or three folds of linen in a lotion made of one ounce of calendula, two ounces of glycerine and a half-pint of water, and place them on the parts with a wet bandage, repeating this every two hours. If the skin and under-lying parts are much affected, foment the part with warm water constantly during the day, and apply a bran-poultice at night. When the sore grows soft, let the matter out with a lance, or sharp knife, the fomentation only being then continued. If lymph forms instead of pus, and the swelling still remains, rub the part with the calendula-lotion twice a day. Should this fail, rub in daily a small quantity of a preparation composed of four ounces of soap-liniment and one-half ounce of camphor. Apply carbolic-acid lotion if flies lay eggs in the wound.

One of the best applications for open wounds, mentioned here but applicable as well to clean cuts and lacerated wounds, is a decoction of but-

* The reader will find on pages 325-327 notes upon the methods of healing and the chief points to be aimed at in the treatment of wounds. The necessary changes in phraseology will make the main part of those remarks applicable to wounds in the horse and other domestic animals.

ternut bark. Fill a kettle with this bark, chopped fine, cover with water, and let it simmer slowly, adding water as it evaporates, until a strong tea is made. Apply with a swab. This will both keep the wound clean and prevent the flies from infesting it, two very important points.

INCISED WOUNDS, OR CLEAN CUTS.

Incised wounds are those in which a clean cut is made, without laceration, by some sharp-edged instrument.

TREATMENT.—In many cases the lips of the wound close and heal without treatment. In other cases calendula-lotion will be found an excellent external application. If the wound fails to yield to this treatment, the surgeon must join the lips by some process, and it is advised to call him at first in case of severe cuts. If the loss of blood be considerable, give tonics to restore the strength, such as cinchona.

Bleeding is generally of little consequence unless a large artery be cut, which is indicated by *spurts of bright-scarlet blood*; then the mouth of the artery should be seized at once with forceps, and a ligature be put around it. If this be impracticable, put tow in the wound and hold it with a bandage. Pieces of lint soaked in a lotion of millefolium, one part of the strong tincture to nine of water, may be put in the wound, to the bottom, and be left until the healing of the wound pushes them out; this will be better than the tow. Cold water dashed on the part will often stop bleeding; as also will strong alcohol. If bleeding will not stop after the lips of the wound have been held together, and the attendant has no ready means for tying the artery, he should apply pressure firmly on the blood-vessel *above* the wound (toward the heart) by passing a bandage around the affected member, with a stone or walnut resting on the artery, then putting a stick underneath and twisting the bandage until the flow stops. Severe bleeding from a vein (indicated by a *constant*, not spurting stream) may be checked by like pressure applied *below* the wound. If flies lay eggs in the wound, wash with a lotion of carbolic acid. Read the note under Contused Wounds upon the use of the decoction of butternut bark.

PUNCTURED WOUNDS OR PRICKS.

Punctured wounds have small openings, but are usually deeper and more serious than others. They are made with pitchforks, nails, thorns, splinters, crockery, and the like.

TREATMENT.—Remove thorns, splinters, or other foreign body from the wound. If the injury is not near a joint, or has not penetrated a tendon, it is best to lay open the wound and make an ordinary incised wound,

treating it then as directed under the last subject above. If a tendon be punctured and fluid is discharged around it, or if a joint be punctured, adopt the treatment laid down under Open Joints. If lock-jaw ensues, as is likely to be the case from this kind of wound, especially if the foot be pricked, consult the section on that subject. Should flies' eggs be seen in the sore, apply carbolic-acid lotion for their destruction.

LACERATED WOUNDS.

These are injuries in which the skin and parts under it are torn, jagged, irregular, and often bruised. They are caused by nails or hooks in the walls of the stable, poles or sticks running into the flesh, and the like.

TREATMENT.—Bring the parts of the wound as nearly as possible into the natural position of the skin, and cut off those portions of lacerated skin which you know would surely slough off eventually. Grit or sand should be previously removed, by bathing in warm water if the bleeding be slight, or by dashing on cold water if the bleeding be profuse. If the wound be large, a surgeon may sew the parts, bringing the lips closely together. For the inflammation, which is usually severe, use warm fomentations every one, two or three hours, keeping a bandage on to exclude the air and to prevent the washing away of the lymph which is essential to healing. In about a week, when inflammation has subsided, remove the bandage and discontinue fomentations, allowing a little water to run over the wound to remove superfluous matter. The use of a sponge must be avoided, as it will remove the lymph. Indeed, unless the matter is very plentiful and has a bad smell, even water should not run over the wound. When healing commences, oil-silk or collodion, applied with a very soft brush, may be put on the sore to exclude the air. Liniments are usually harmful; nature should take her course, with such assistance as has been mentioned, until granulations appear in the wound, when calendula-lotion will aid the skinning-over of the injury. Should the granulations rise above the skin, or "proud flesh" form, apply finely-powdered sulphate of zinc. For flies' eggs in the wound, apply a lotion of carbolic acid. Read the remark under Contused Wounds upon the use of butternut bark.

OPEN JOINT OF THE LOWER JAW.

This needs some special mention, and may be considered here, laceration of the tongue being another specific kind of wound that will be noticed. Such open joint may be caused by a blow, the joint-oil escaping, the parts becoming painful and swollen, and the joint possibly becoming so inflamed as to cause disease in the bone and prevent eating.

TREATMENT.—Keep the jaws fixed by a head-collar, with a strap fastened around the face and lower jaw above the nostrils. Feed only thick gruels and other fluids until the jaw is completely healed.

LACERATION OF THE TONGUE.

Laceration of the tongue may result from a high port-bit; the forcible administration of food; irregular or long, rough teeth; a blow when the tongue hangs out; thorns, sharp bones, and the like. The symptoms are slobbering and inability to eat, which will lead to an examination that will discover the laceration.

TREATMENT.—Remove foreign bodies. Apply a lotion of equal parts of calendula and water. If ulcers appear, apply alum or hydrastis. Keep the bit out of the mouth for some time. Give soft green food.

GENERAL CARE IN WOUNDS.

Keep the wounded parts at rest. Remove any foreign body or matter that may be in the wound. If the jaw be injured, give only sloppy diet, such as does not require mastication. If the legs are affected, the horse should be tied up in many cases, and occasionally should be so placed that he cannot gnaw the wound. If "proud flesh" forms, which is an excessive and unhealthy granulation, apply sulphate of zinc or copper, nitrate of silver, or alum. If the healing process be too slow or stopped, the wound may be roused again to action by gently removing the edges with a knife if it be in the skin, or by other mechanical irritation if another part be thus dormant. Poisoned wounds, as from snake-bites, should be promptly cauterized, as directed under Hydrophobia. All indications of lock-jaw should be promptly regarded. It is also desirable, often very urgent, that oil-silk be put over the dressing to exclude the air.

STAKING.

Staking is an injury sustained by leaping a fence or gate, the skin and tissues of the abdomen being punctured or torn.

TREATMENT.—If the skin is not broken, but the muscles are torn, and the bowel falls into the torn part underneath, a well-fitting pad must be bandaged on and kept wet with arnica-lotion. Should the skin be broken and the bowel hang out, keep the horse where he is, gently wash blood and grit from the bowel with warm water, and replace it with gentle pressure and manipulation. The surgeon will then draw the lips of the wound together and bind them with pins and tow. With a bandage around

the body fasten on the part a pad kept wet in calendula-lotion. If the bowel has been torn, the surgeon will sew it up before replacing it. Give aconite and arnica alternately, ten drops every two hours. Keep the horse quiet. Give soft food, and that sparingly.

SPRAINS.

A sprain is an over-stretching of muscles, ligaments or tendons, and may arise from either of various causes. It affects any part that is subject to such undue tension.

Symptoms.—Pain on pressure, or motion; redness; swelling; heat; fever of the affected member, and sometimes of the general system. Since a sprain will impair or destroy the use of the parts, the muscles about such parts will waste more or less, such a condition being known by the general term "sweeny," though it is popularly applied quite exclusively to such a condition about the shoulders. This specific form of sweeny will be considered further on.

GENERAL TREATMENT OF SPRAINS.—For fever, when it exists, give aconite several times a day. Arnica is needed when the sprain is in the muscles; and rhus if it is in the tendons or ligaments. Apply fomentations, or bandages kept wet in water (hot in winter and cold in summer), or in a lotion of arnica or rhus. Lint wet in equal parts of glycerine, alcohol and water, and covered with oil-silk and a bandage, is an excellent dressing. Poultices will be found beneficial in some cases. Simple rest may be sufficient in some sprains, and is always essential. When the inflammation has been reduced by any of the means which have been mentioned, a lotion of one part of rhus to eight of water may be well rubbed in night and morning, and a moderately tight bandage be applied. An excellent liniment is made on the following formula:

Soap liniment,	4 ounces.
Camphor,	½ ounce.
Liquor ammoniæ,	1 ounce.

Mix.

Rub on a spoonful once a day, for two or three days perhaps, but discontinue it as soon as a mild blister is produced. Keep the horse's head tied up forty-eight hours, and repeat the application in ten days if necessary.

SWEENY.

We apply this term, in its popular sense, to a sprain of the muscles which fill the back cavity on the outer side of the shoulder-blade, and

which pass over the outer side of the shoulder-joint. It chiefly affects colts and young horses that are put to the plow, but occurs in any horses that travel on uneven ground where they are liable to step into holes.

Symptoms.—Heat, swelling, tenderness on the outside of the shoulder-joint, and a gait which is peculiar to this disorder; the walk or trot may be attended with little or no lameness; looking at the animal from in front, one sees that the affected shoulder rolls outward much more than the other; the muscles soon begin to waste rapidly, and in extreme cases the shoulder-blade will seem to be covered only by the skin. Like symptoms, even including the characteristic waste of the muscles, may attend sprains in other parts, more notably the haunch, and such cases require substantially the same treatment as shoulder-sweeny.

TREATMENT.—It may take treatment for months to effect a complete filling of the cavity, but this can be done if the case is taken before it has stood long; in those which are fully confirmed only a partial restoration can be effected. In the first stages, marked by heat and other acute symptoms, treat as directed for Sprains. After such symptoms have been subdued, impose exercise on smooth ground and rub the parts with a rough rag, a bunch of hay or a stick to stimulate circulation—the liniment made on the formula given under Sprains being a most useful adjunct to this end. Another superior local application is here given:

Oil of spike,	2 ounces.
Origanum,	2 “
Aqua ammonia,	2 “
Turpentine,	2 “
Sweet oil,	2 “
Alcohol,	2 “

Mix.

Apply every morning for three days, and on the fourth day wash thoroughly with Castile soap and water. On the fifth apply as before, continuing three days, then washing as on the fourth day. So continue until a cure is effected, rubbing well with the hand at each application.

SHOULDER-LAMENESS.

Many mistakes are made in locating lameness in the shoulders. Hence, the symptoms should be the more carefully named and observed.

Symptoms.—The horse is unwilling to raise or advance the leg, and moves it by dragging it with the toe on the ground, turning it around when he does advance it; pain is caused by lifting and drawing the leg

forward or outward, and by pressure on the affected muscles; sometimes a swelling at the point of the large bone near the breast, which is pained by pressing the fingers along the muscles.

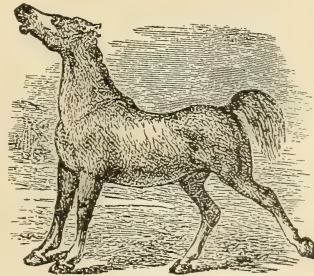
TREATMENT.—Frequently foment the part with warm water. When active inflammation ceases, rub in the camphorated ammoniacal liniment of which the formula is given under Sprains.

DISLOCATIONS.

These almost always need the services of a surgeon. They are generally characterized by a protuberance over the displaced joint, which is caused by the end of the bone pressing against the skin which covers it. The use of the joint is, of course, lost while the displacement continues. The accompanying illustration of a dislocation of the whirl-bone, with the protuberance at the joint, will be a guide in detecting the disorder in other joints. We here give the special symptoms and treatment of a dislocation of the *stifle-joint*.

Symptoms.—Should the stifle-bone be displaced, the leg protrudes backward during motion, with inability to draw it under the body; the pastern trails along the ground; swelling appears on the outside of the joint. In a sprain of the stifle-joint there will be the heat, swelling and tenderness incident to sprains, and in action the horse will carry his leg around instead of raising it naturally.

TREATMENT.—We mention the treatment of this form of dislocation because it may be attempted by any intelligent person; but displacements in other joints should always be treated by a surgeon. A line should be passed around the pastern and an assistant draw the leg forward and upward toward the belly, while the operator puts his arms around the haunches, places his hand on the outer angle of the stifle-bone, presses it forward and upward, and thus manipulates until the bone slips back to its place, as indicated by a snap. Keep the head tied up for a few days to keep the horse from lying down, and apply a strong pitch-plaster to the joint to prevent a recurrence of the dislocation. The strained tendons will need to be treated as directed for Sprains. To keep the horse from lying down the requisite time slings may be necessary to relieve the limbs of a part of their weight, and a suitable one is shown in cut 169.



193. DISLOCATION OF THE WHIRL-BONE.

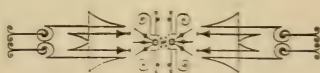
FRACTURES OF BONES.

Fractures are caused by various forms of violence. In some cases it may be difficult for one who is not conversant with such matters to detect their existence, but generally little trouble will be found in deciding the matter, especially in the legs. In nearly every case when a fracture is discovered or suspected, a veterinary surgeon should be called at once, though in bad fractures in the legs of horses which are of an excitable disposition, treatment is quite useless, and it is better to shoot the horse, *as always in broken back*. After the surgeon has operated on the fracture and left, swelling and inflammation may be so great, especially if splints have been used, that he must be recalled. Should "proud flesh" form when laceration of the tissues has been caused, apply to it nitrate of silver or powdered sulphate of zinc. If the skull be broken, as may occur from the horse rearing and falling backward, immediate care should be taken to prevent poll evil; if the latter ensues, follow the treatment elsewhere laid down for it. If the ribs be fractured, and it is certain that a sharp end does not protrude inward, but the ends of the ribs are joined and protrude outward, pass around the body a compress and bandage, giving absolute rest and quiet. Some weeks are required for a cure of a fracture.

OVER-EXERTION.

Over-exertion gives rise to symptoms which call for treatment, prominent among which are loss of appetite; failure to lie down; sleep while the animal stands; hanging head; pulse slow and weak, or quick and hard, the animal being much excited.

TREATMENT.—If there be loss of appetite, and failure to lie down when the animal is very tired, give *nux vomica*. If the horse moans at each movement, *rhus* will be useful. When the pulse is hard, quick, and attended with great excitement, give *aconite*. *Arnica* is efficacious if the legs be paralyzed; *arsenicum*, if they be stiff; *rhus*, if they be swollen. If the animal is distressed during fatigue, give easily digested food, not in too great quantities, as bran-mashes, steamed carrots and turnips, sweet hay shaken up and sprinkled with water, oats (about two quarts) soaked and well mixed together. As a drink, give water, not cold, and boiled oatmeal.



CHAPTER XII.

GENERAL CARE.

AILMENTS OF DOMESTICATION.

THE horse seldom suffers from disease when he enjoys his natural freedom and untrammelled activity out of doors, but in domestication he soon becomes liable to more or less of the many ailments incident thereto. The subject of health is a broad one as applied to any animal organism, too broad indeed for any detailed consideration that will at once be full enough for its demands, and yet brief enough to be read and heeded. As in the human being one seldom studies with patience and precision the requirements of health until sickness has come on, so the master of a horse is too prone to pass the laws of hygiene of his faithful servant until disease has rendered him unfit for the duties required of him. As was remarked on a preceding page, it is scarcely less than cruelty for one to withhold a due study of the needs of the dumb and helpless brutes which are taken from their state of nature and compelled to do the drudgery and bear the burdens of mankind. It is too often the case that one pays only such heed to his animals as will enable him to draw from them the service he wishes, without being humane enough to make due provision for the comfort and convenience of the animals, which is *his* "reasonable service." It is the purpose here to make notes upon the ordinary particulars in the care of the horse, omitting the technical and scientific data which both deter one from reading what is essential, and are of little popular use. In so doing, we shall allude to some of the common causes of disease and discomfort and indicate the means of removing them.

AIR AND VENTILATION.

* Though able to bear severe changes in the weather when running all the time in the open fields, the horse suffers greatly from the same influences after being comfortably stabled for any considerable length of time. While the cause of colds and like diseases is often traceable to atmospheric changes, a very frequent source of the same will be found in the anxiety to exclude the air

EXPLANATIONS OF FIGURE 194.

The figure on the opposite page exhibits a complete outline of a perfect horse and indicates the measurements of the same. The whole is taken, by permission, from the *Horse-Shoer and Hardware Journal*:

SKELETON AND OTHER PARTS.

- | | |
|---------------------------|-------------------------------|
| 1. Vertebrae of the Neck. | 13. Coffin Bone and Hoof. |
| 2. Breast-Bone. | 14. Vertebrae of the Back. |
| 3. Shoulder-Blade. | 15. Vertebrae of the Loins. |
| 4. Bone of the Arm. | 16. Basin Bone. |
| 5. Radius. | 17. Thigh Bone. |
| 6. Ulna. | 18. Patella. |
| 7. Elbow. | 19. Tibia. |
| 8. Ribs. | 20. Fibula. |
| 9. Carpal Bones. | 21. Bones in the Hock. |
| 10. Metacarpal Bones. | 22. Metatarsal Bones. |
| 11. Great Pastern. | 23. Pastern Bones. |
| 12. Little Pastern. | 24. The Coffin Bone and Hoof. |

FAMILIAR TERMS.

- | | |
|---------------------|--------------------|
| a. Crest. | k. Body. |
| b. Withers. | l. Quarter. |
| c. Throat. | m. Dock. |
| d. Shoulder Points. | n. Sheath. |
| e. Arm. | o. Hock. |
| f. Knee. | p. Shank. |
| g. Fetlock (fore). | q. Fetlock (hind). |
| h. Pastern (fore). | r. Pastern (hind). |
| i. Foot. | s. Foot. |
| i i. Coronet. | t. Thigh. |

THE FOOT.

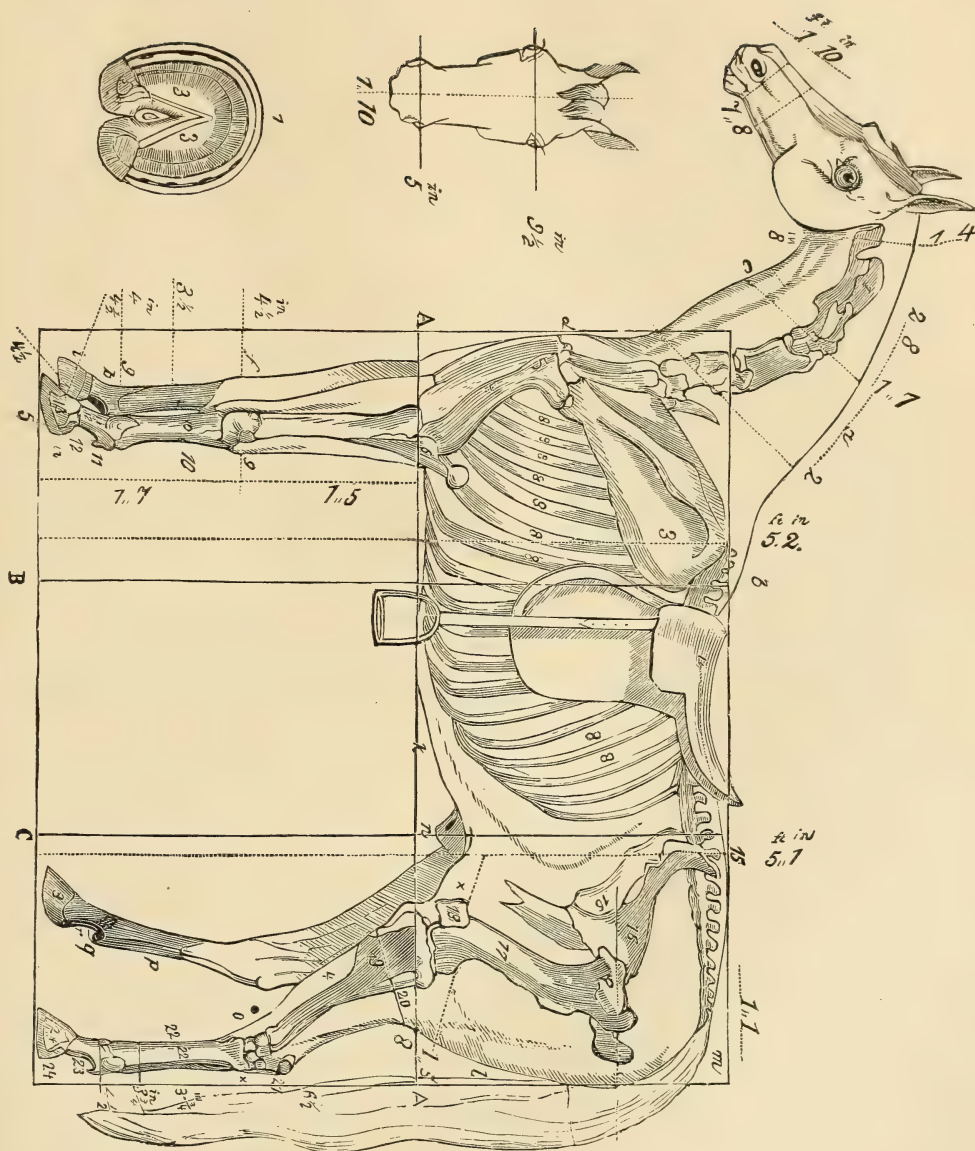
- | | | | | |
|----------|----------|----------|----------|----------|
| 1. Toes. | 2. Horn. | 3. Sole. | 4. Frog. | 5. Heel. |
|----------|----------|----------|----------|----------|

PROPORTIONS OF THE PERFECT HORSE.

A A, line separating two rectangles which show the Depth of the Body as proportioned to the Length of the Legs.

B and C, lines dividing off the fore and hind Quarters and the Body, and indicating their respective and comparative proportions.

	Ft.	In.		Ft.	In.
Length of Head, generally.....	1	10	Across Arm.....	0	6
Across Eyes.....	0	9½	Across Knee.....	0	4½
Across Nose.....	0	7	Across Shank under Knee... ..	0	3¼
From Eye to Cheek Bone	0	8	Across Fetlock-Joint.....	0	4
Neck across Gullet.....	1	4	Across Pastern.....	0	3
Middle of Neck.....	1	7	Across Coronary Bone.....	0	4½
Across Neck at Body.....	2	0	Highest Part of Hoof.....	0	4½
From Withers to Ground.....	5	2	Length of Hoof from Toe to Heel.	0	5¼
From Crest of Loins to Ground..	5	1	From Rump to Tail.....	1	1
From Elbow to Stifle.....	2	4	From Hip to End of Quarters...	1	9
From Elbow to Knee	1	5	Across Hock	0	6½
From Knee to Ground.....	1	7	Across Shank below Hock.....	0	3¾
From Withers to Chest.....	2	2	Across Fetlock.....	0	4½



194. LA PORTE'S STRUCTURE AND PROPORTIONS.

by closing doors, windows, and ventilators, thus keeping the animal in a temperature warmer than that to which he has been accustomed, and in an atmosphere made impure by noxious gases and a deficiency of oxygen. Such treatment will sooner give a horse a cold than an opposite one, for he may be turned out of a warm stable to grass with little or no injury, since the loss of heat by extreme cold will be repaired by internal combustion, the oxygen from the cold air acting on the carbon given off from the lungs, and thus producing carbonic acid, the chief source of animal heat. *Cool* air stimulates and invigorates the body, rendering it less liable to disease; *hot* air is weakening, for the external temperature being so little below the internal, heat is not required, and a sufficient quantity of oxygen is not breathed to properly assimilate the large amount of nutritious food still given, which now tends to render the blood impure by excess of carbon, and the body more liable to disease. Cool air increases the appetite by bracing the muscular fibers, especially those of the stomach. Hot air deranges the liver and organs of digestion. When the temperature is moderate and oxygen is in excess, the carbon is mainly carried off by the lungs; but if the external heat approaches that of the internal, the carbon, instead of being removed by the lungs and passed off as carbonic gas, is left to be borne off by the liver; and thus the liver and digestive organs become deranged. We therefore see how important it is to keep our stables cool, and at the same time to avoid cold currents of air. The most appropriate temperature is sixty degrees, and this we should endeavor to maintain during both summer and winter, even if the surface of the body must be kept warm by a moderate amount of clothing.

Impure air is a much more fruitful source of disease than hot air; hence the importance of keeping the stable thoroughly clean. The air which has been breathed, the moisture from sweats, the urine and dung, are all very poisonous to the horse. The first two can be easily removed by ventilation. The dung should be frequently cleared away, before the horse has trodden it or the bedding is befouled. Diseased feet as well as poisonous air often result from rotted dung. The urine should be carefully taken away by drains before time is afforded for the rising of the odors of ammonia, which are very hurtful to the health of the animal.

From what has been said above it is clear that a special regard should be had to ventilation. Pure air consists of eighty parts of oxygen and twenty parts of nitrogen. Any influence which considerably disturbs this proportion proves injurious to the health of the horse. Pure blood and good health depend upon a liberal supply of oxygen. If we open an artery and immediately examine the blood, we will find it to be a bright-scarlet color, coming just from the lungs where it has been in contact with air

taken into these organs. The blood in the veins, on the other hand, is of a dark-red color, bearing the impurities taken from all parts of the system. By experiment it has been shown that pure oxygen gives this scarlet color to the blood, while no other gas does. Hence, it can only be that it is oxygen which purifies the blood. Again, it is found that, if a horse takes in one hundred cubic inches of pure air at one breath, he takes about eighty cubic inches of oxygen and twenty of nitrogen, these being usually very slightly reduced by traces of carbonic gas. But the one hundred cubic inches of air thrown from the lungs contains about fifteen of oxygen, eighty of nitrogen, four of carbonic gas, and one of water-vapor. Thus the air by breathing loses what is best for life, and takes what is harmful. If the same air be breathed over time and again, it is clear that it must soon utterly fail to sustain life, being indeed very poisonous.

When it is known that a horse will breathe about fifty thousand cubic inches of air in an hour, generating about five thousand cubic inches of carbonic gas, some idea may be gained of the demand for provisions for changing the air often in an occupied stable. Many experiments have been made on horses stabled in large numbers, and it has been always shown that sickness and death are much less frequent when proper room and ventilation are afforded. Suitable ventilation consists, first, in the introduction of a sufficient quantity of pure air without draught; second, in the removal of foul air by other outlets than doors or windows. The first part leads to two important questions, namely, what is a sufficient quantity of air for each horse, and how is it to be supplied? Each horse requires a space of not less than two thousand cubic feet, and the air should be changed at least three times an hour. The windows and inlets for fresh air should be placed well above the animal, the former so arranged that the wind will not blow directly on him.

As the space necessary for each horse is too large to be practicable for most private establishments, we must next consider how we may have healthy stables with less space. It is quite possible by attending to the following rules of ventilation: First, breathed air being lighter than atmospheric, it ascends toward the roof, passes out if no obstruction is in its way, and is replaced by pure air admitted from doors, windows, and other inlets. Second, if carbonic or other gases be confined by ceiled roofs or otherwise, they become condensed and diffused, mingling with the pure atmosphere and rendering it injurious to health. These rules have no reference to cubic space, but simply require a free outlet above for the impure air, and free inlet through windows or other openings by which the vacuum can be instantly filled. The simplest way of carrying out these rules is to do away with ceilings and lofts overhead, and merely have the sides boarded

within, which will make the stable neither too hot in summer nor too cold in winter; but where this cannot be done, air-chambers should be carried up from the stable roof, and be so guarded by revolving caps as to prevent any current of air from passing down into the horse's apartments.

FOOD AND DRINK.

FOOD.—*Green Fodder.*—Grass is the natural food for the horse. Of its many varieties some possess little nutriment and are of limited value as food; others are not adapted to the constitution, and lead to diseases often attributed to other causes, if given as regular food. When the amount of nourishment is small, the animal must take a large bulk to support life, rendering the belly large, loading the flesh with fat and making it soft and flabby, a condition unfavorable to quick work. Young horses and those from which work is not required may be profitably put upon grass that has a mixture of clover. Putting horses designed for immediate service upon grass is seldom advisable, as it produces loss in the nervous system, and the limbs are injured by the extra strain required to get the animal again in condition for work.

A great variety of opinions exists as to the relative amount of nourishment in the different green foods, as clover, timothy, blue grass, lucerne, green oats, and the like. At first these should be given in small quantities, mixed with half the usual allowance of hay; but after the first week or ten days the hay may be discontinued and the quantity of oats be increased, but not wholly withheld from horses designed for quick work. Clover is the most fattening, but it is apt to produce colic when given too plentifully at first.

Roots.—Of roots given to horses the most common are potatoes, turnips, carrots and parsnips. The first two should be boiled and mixed with hay and bran; they are good only for farm-horses, and of indifferent value for them, being merely productive of fat and lacking flesh-forming principles. Carrots given raw are supposed to be good for the wind, but, excepting in very small quantities, are unfit for horses doing quick work. The remarks about carrots apply equally to parsnips; they are generally chopped and mixed with corn, and when given for a time make the horse inclined to refuse oats, unless the latter be added to the parsnips. A horse in good condition is not benefited by them, but if he be hide-bound, or his skin be unhealthy, they are profitable. They should be given whole, to prevent choking. Beets are considered good feeding in late spring. All roots should be mixed with other food to secure their best results.

Hay.—Hay may be composed of clover, mixed clover and timothy, blue grass, or prairie or upland grass. For heavy work and when weight and

bulk are desired, pure timothy, or timothy mixed with clover, is the best; but for road-horses, driving, racing, or any quick work, blue grass or upland prairie should be used. Hay should be well cured, and if possible be put up and dried without wetting. It should not be allowed to get over-ripe, as in that case the seed will be lost and the stalk lose much of its nourishing properties. Good hay has a bright-green appearance and sweet odor, and is pleasant to the taste. As a rule, clover is better adapted to cattle and sheep than to horses. *The quantity of hay* necessary for a horse depends upon his size, constitution, kind of work, and the amount of other food given. Eight pounds of hay and twelve of oats form a good allowance for a fairly-worked horse. Clover, hay and straw, cut into chaff, a double-handful being added to each feed, will be very beneficial.

Straw.—Straw is now often substituted for hay, and by attention to the following directions will be found quite as good. The nutritive property in either hay or straw consists in the amount of its nitrogenous principle. Now, taking the whole of the straw, not including the head, we find by chemical investigation that it contains one-third as much nitrogenous principle as hay; consequently we should give about thirty pounds of straw daily as an equivalent for ten pounds of hay. The upper third, that is, the end with the chaff, is found to be almost as suitable for forming flesh as the best meadow hay, and seven pounds of this will answer for six pounds of hay, and keep the horse in equally good condition for work.

In this connection may be given the results of experiments made on sixty thousand horses by a special commission appointed in France. This successfully overthrows the erroneous opinions entertained regarding the value of straw. It was shown that straw is *better* for the constitution and working condition of horses than hay, although it does not produce in them an equal bulk when given *whole* in the same proportion as hay.

During a period of five weeks two sets of horses, each numbering about seven thousand, were experimented upon. To one class were given eighteen pounds of straw and nine and one-fifth pounds of oats; to the other class, eighteen pounds of hay and nine and one-fifth pounds of oats, the combined weights being the same for each class, the only difference being an interchange of hay and straw. The horses fed on straw were vigorous at their work, and did not sweat much. Of those fed on hay the weight of the body increased, the dung was copious but hard, dry, and black; they were covered with sweat when at work, and were much softer than usual, a fact which is perhaps accounted for by the quantity of hay being larger than was usually given. In the stable the skin was warm and dry, the horse yawned often, respiration was impeded, and thirst was greater than in those fed on oats and straw. There was no change in

the size of the body of those fed on straw, but those fed on hay increased in bulk. The results of other experiments may be thus summed up: Oats and straw are the foods which agree best with the horse, and hay that which agrees least. Barley comes after oats and straw, then rye. A mixture of straw with one of these grains would be the best combination. Horses fed exclusively on oats drink and sweat less than those fed on hay or straw, and their vigor is superior. Oats and straw, even in less quantities than hay, would put the horse in better condition and make him more vigorous.

There is a strong objection to *new* hay, but it has no sufficient grounds. The French commission named above investigated this subject and the result was that the horses fed on the usual allowance of new hay for two months were found as hard and vigorous as when fed on old hay. But to make certain whether new hay had an injurious effect, the daily allowance was increased one-half, and in all cases, though for fifteen days the horses were a little soft, they regained their whole energy and became hardier and in better condition. New hay therefore is not detrimental but highly beneficial, if well cured.

Oats.—In feeding oats care should be taken that they be full and hard, with thin husks, free from dust and pebbles, sweet to the taste, and agreeable to the smell. One is liable to give his horse too short an allowance when feeding oats, if he is not observant of the weight, per bushel by measure, since they vary a great deal. It is found that a horse will consume a given *bulk* in oats, and hence the heavier the grain the more nourishment will the horse get, and it should be determined that he is getting an adequate amount for the service required. The opinion that new oats are indigestible and injurious to the kidneys and bowels seems to lack a full support. That they are not good for horses put to speed is probably true, but they are not unwholesome for other classes, as has been shown by horses in the British and French military, where they have been found equal in fattening properties to the old grain, and do not make the animal sick. Oats dried in a kiln, especially if they are soft, are nearly or quite as good as the old. Crushed oats are more readily digested and are hence more desirable for animals with defective digestion; but if three parts of these are mixed with one of beans, the result will be improved. Oats that are musty or have been heated are very injurious, more often causing disorders than those that are dirty; but injuries attributed to them are quite often due to mow-heated or musty hay.

Beans and Peas.—These have about the same nutriment and the same effect on the animal; but they have about twice as much of flesh-forming principle as oats. In large quantities they are too heavy for food and apt

to derange digestion. A handful, however, mixed with a feed of oats, is very beneficial, though this remark applies only to horses doing hard work. Beans are cheaper and more easily digested, and hence are preferable. A given measure of either is much more than equal to the same measure of oats.

Barley.—Barley is fattening, and improves the coating. It is not so digestible as oats, unless it be well soaked in water or, still better, kiln-dried. For horses on the road barley so prepared is superior. If it has been water-soaked until it has sprouted and then dried, it is good for horses that are delicate and refuse other food.

Indian Corn.—It is best to crack this, or give it in meal, and mix it with chopped hay and straw. While it is good for horses doing slow work, it is not good for those requiring quick action. If the meal be mixed with twice its weight of cut hay, it makes perhaps the best article for ordinary feeding; but it is better to combine or alternate this with some mixture of oats.

Bran.—Bran is good both for healthy and sick horses. It should not be given if fine, as it forms too much of a paste and closes the passages in the membrane. Coarse bran, with hot water poured upon it and covered awhile before using, is very good, especially when the horse is temporarily relieved from labor. Improved milling has, however, so reduced bran that the nutriment is very small, and care should be taken that the animal be not compelled to depend too largely upon it. Dry bran mixed with corn will often improve the mastication.

Quantity and Quality of Food.—Though these differ much according to the work, age and constitution of the horse, it may be remarked in general that the growing colt or very active horse requires more food than others; that more is necessary in cold weather than in warm; that horses doing fast work require substantial food in condensed form at regular intervals, given two hours before fast service is required; that those doing fast and laborious work should have as much as they will eat with a good appetite, the hay being limited; that those doing slow and not laborious work, as well as idle ones, should have less grain and more hay or straw, bran and green food being given at times; that those which purge on rapid work should not have much water until after the work, and should be fed not less than two hours before work, a small quantity of beans being added to each feed of oats, and an ounce and a half of flour in the form of paste being added to the water when given before work; and, finally, that horses in ill-health should have soft or cooked food and, when possible, some that is green.

Young horses just put up from grass should have walking exercise. If a mixture of bran and oats in equal parts be fed, it should be well soaked in warm water to insure perfect digestion. The following is, perhaps, the

best plan: First week, bran-mashes morning and evening, with oats at noon; second and third week, oats morning and noon, with bran-mashes at night; thereafter, bran-mashes every second night, with oats at other times.

Comparative Values of Foods.—Animals doing quick work expend much muscular fiber, and hence require food containing *fibrine* to restore the loss. Corn and beans furnish this; but hay contains some salt-properties not in corn, so that it should be added. The brain, too, requires fatty matter, albumen, and gelatinous elements, and carbon is requisite for animal heat. The value of foods for the blood depends upon the amount they contain of the component parts of the blood, as chlorides (including common salt), phosphates and alkalis. While, as before stated, fibrine and albumen are highly nutritive for horses doing fast or laborious work, food containing sugar and starch are especially adapted to the production of fat, and also of carbon, the generator of heat. The woody part of food is not nutritive, but supplies the necessary bulk, and gives the moderate distension of the stomach required for proper digestion. Keeping in mind the foregoing remarks, one may with tolerable accuracy determine the relative values of foods for different conditions by an examination of the subjoined table of "Stonehenge," which exhibits the proportion of the different constituents in 100 parts of the various foods named:

	Woody Fiber.	Starch and Sugar.	Fibrine and Albumen.	Fatty Matter.	Saline Matter.	Water.
Hay.....	30	40	7	2	7	14
Clover Hay.....	25	40	9	3	9	14
Oat Straw.....	50	31	* 1	a trace	5.5	12.5
Oats.....	20	53	11.4	.6	2.5	12.5
Beans.....	14.5	40	26	2.5	3	14
Peas.....	9	48	24	2	3	14
Barley.....	14	52	13.5	2.5	3	15
Indian Corn.....	6	62	12	5	1	14
Bran.....	54	2	20	4	7	13
Carrots.....	3	10	1.5	0	1.5	84

* The upper third, with the head, has about 7.

General Remarks on Feeding.—The frequency of feeding should be varied according to the length of time the horse works. The feeds should be at regular intervals. Harnessing is a matter of such short time that the horse should be unharnessed while feeding and receive grooming when stabled for feed. *Extra quantities of food should not be given in anticipation of special work*, as it will be attended with a waste in undigested food, or derange the appetite. Brood-mares and colts should be allowed good pasturage, which may also be accorded with profit to other horses not in con-

stant use, horses engaged in frequent racing always excepted during their engagements. Where great fleetness is required, grain should be given, with enough chopped straw or chaff to insure perfect mastication. Grains of all kinds are best crushed, and when mixed with chaff should be so thoroughly mingled that they cannot be picked out and the chaff left. Twelve pounds of oats per day, divided into three feeds, make an average allowance for a horse in regular work during winter when green food is wanting. An equivalent for this may be easily chosen from the above table of "Stonehenge." Damaged food of any kind should be avoided, the feeding of it being mistaken and foolish economy. The most successful breeders persist in feeding a little hay at night in the rack, despite the prejudice against this method. It is better to slightly moisten the hay with salt-water, to prevent dust and impart a relish. The hay should be of the best quality, and be given in small quantities, for the practice of putting large amounts in a rack proves very wasteful.

DRINK.—By noting the amount of moisture thrown out by the lungs, mouth and skin, one gains an idea of the absolute necessity of caring for proper drinking to keep up the normal condition of the body. But usual care should be exercised that the amount may not be so great as to keep the animal weakened. The quantity which a horse will consume varies greatly—from about four gallons per day to four or five times this amount; in special instances even the last amount has been surpassed very much. The horse should be watered, as a rule, three times a day; in cold weather, and in absence of work, twice is sometimes sufficient, while in hot weather, during work, three times are not enough. In the latter case a small allowance may be given just before the feed and as much, if it is taken, before the meal is finished. In other cases, water should usually not be given within an hour before feeding, nor when the animal is warm. The horse at work should not be allowed an unlimited supply, but a small amount should be given at each time, and at frequent intervals. Though hard water may not injure the horse that is accustomed to it, soft, *clean* water is always decidedly better. Very cold water is never good, and often injures, if it does not kill the horse. Pure, cool water is the best.

GROOMING, BATHING, EXERCISE AND CLIPPING.

GROOMING.—Grooming is positively essential for both the appearance and the health of the horse. The watery portions of the body and worn-out material pass out through the pores of the skin, and if these be clogged by scurf, this refuse material must pass away through the lungs, liver, kidneys and bowels, causing derangement of these parts. Not only are the

pores kept open by grooming, but the vessels and pores as well are stimulated to increased action, and thus the oil at the roots of the hair passes through the skin, giving a fine glossy appearance to the animal. The horse should be groomed in the open air, unless the weather is bad. Even the apparent injury from cold air is more than balanced by the increased warmth secured by the friction. The curry-comb should be used sparingly, and a stiff, hard brush be briskly applied. Rubbing the legs downward with the hand is very beneficial. Horses that are not housed and those which are turned out just after work should merely have the mud, dust, dried sweat and the like removed when they are turned out or taken up, the skin to be left undisturbed. The use of a soft brush, or of a dry cloth passed lightly over the hair, will generally suffice.

WASHING AFTER WORK.—If properly done, this is to be highly recommended. We all know from experience how refreshed we feel after a warm bath, and it is but reasonable to suppose that it will have a like effect upon the horse, and render him less liable to inflammation and congestion of any internal organ, as well as give him the quiet which he needs. The proper mode of washing is to apply quite warm water and soap quickly and freely to the whole surface and scrape it as dry as possible, then rub with wash-leathers for ten minutes, not longer. The usual clothing should then be put on and be covered with an extra blanket, the legs being bandaged with flannels. The animal should now have some grain-gruel and afterward some bran-mashes. After two hours in this condition the body becomes warm, and the outside blanket, which will be wet, should be removed and the horse be well bedded.

Dry bandages should be used for drying the legs or warming them. *Wet, warm* bandages tone up the vessels and relieve them by removing heat. *Wet, cold* bandages produce sweating and carry off some of the contents of the vessels; but if the cold bandage be not kept cool in some way, it will soon act as if it were originally warm. Wet bandages are desirable in cases of sprains, blows, and long exertion on hard roads, but should not be continued longer than is actually necessary, or they may have an effect the opposite of the one desired, which is to excite evaporation and to remove deposits from the interstices of the flesh. If applied too long, they inflame the skin, and cause the hair to fall.

CLOTHING.—Horses doing slow work and having their natural coat are better without any clothing. But clothing is far preferable to a hot stable, and as a glossy coat is very desirable, the horse should be warmly clothed, and the stable be kept cool and well ventilated.

EXERCISE.—This is absolutely necessary to promote digestion and otherwise preserve health. Quick work is injurious directly after feeding,

or when the horse has just been taken from pasture. Young horses should be given walking exercise two hours daily for the first month of training; during the second, be *slowly* trotted, the speed being but gradually increased thereafter. One of the most prolific causes of disorders in the feet and breathing organs is the lack of regular exercise properly given. Horses in steady and easy work are presumed to receive the best exercise. If only occasional extreme work is required, there is all the more demand for systematic training or exercise, as it hardens the muscles, and fits the horse for the severe strain put upon him.

The horse should not be taken out immediately after feeding, nor should he be put beyond a moderate foot-pace for at least a half-hour thereafter. Then he may be quickened according to the demands upon him. Heating in exercise should be avoided, but if it be induced, the animal should be walked before returning to the stable, until he is cool.

Feeding should always precede the exercise by at least a half-hour. The horse may then be taken out for an hour and a half in the forenoon and afternoon each, the hours to be chosen, according to the season, when it will not be excessively warm or cold. One of the commonest mistakes in the care of horses is blanketing immediately after the animal has entered the stable after hard driving or working. At such times vapor will rapidly rise for a few minutes and wet the blanket. As soon as it becomes cold the horse will be covered with a cold, wet coat, with no chance for an escape of the moisture, and thus almost surely be subjected to a chill. The proper course is to allow the steaming horse to stand for about ten minutes before putting on the blanket, thus giving an opportunity for a great part of the vapor to pass off.

CLIPPING.—This is both an injury to the horse and a folly of fashion. It is purely artificial and utterly unnecessary. Still more, it does not secure greater beauty, a better looking animal being secured by a reasonable care of the coat which nature has given. Indeed, a well-groomed coat produces a gloss for an unshorn horse that is superior to any artificial appearance, while the exposure incident to clipping is apt to create disorders of the hair and skin that will make a revival of the natural beauty impossible. This practice should be studiously avoided, because it attains no advantage, and is highly injurious, if not cruel, especially in extreme weather.

THE STABLE.

It has been said that about 60° is the proper temperature of the stable as a rule. In summer, however, the stable should be kept as cool as possible, especially during the day. It is a mistaken idea that the temperature

should be kept on a level with the outdoor air. Indeed, in keen, frosty weather the temperature within should be much above that outside. It is not only not advantageous to expose a horse to cold when he is inactive in a stable, with a view to inuring him to severity when he is taken out, but it is very injurious. The exercise when out of doors will compensate for a great change in temperature. But more caution is necessary, on the whole, to prevent too high a temperature in the stable, since it will greatly increase the poisonous gases arising from the excrements and other refuse of the stable, which are more injurious to health than a much lower temperature.

Bedding.—This should have constant attention, and be kept thoroughly clean. Many of the coughs in horses which are closely stabled are undoubtedly traceable to a neglect of this important part of their care. Even among a few horses the foul matter in any part of the stable, and the notoriously poisonous exhalations of the same, prove highly deleterious. In cold weather, when the closeness of the stable prevents a free circulation of the air, special care should be taken. It is not enough that the manure and wet litter be removed from the stall; they should be carried *entirely out of the stable*, the stall itself being kept as dry as possible. When standing in the stable the horse should always have a liberal supply of bedding, of which the best are wheat and oatstraw, though peastraw is good. Sawdust is reasonably good, but when it is wet it is more liable than straw to impart dampness to the stall. The floor should be swept before the bedding is put down for the night; then the litter should be carefully arranged, being higher at the sides than in the middle.

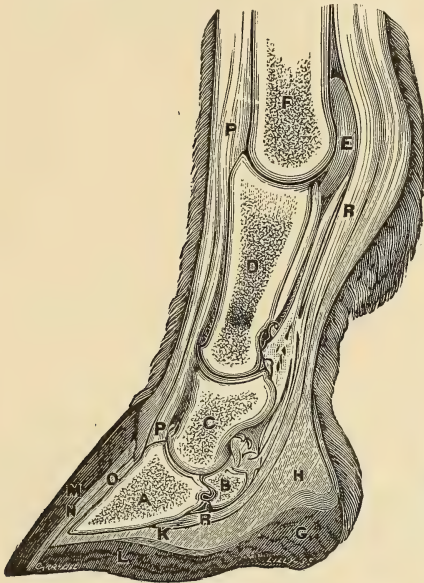
CARE OF THE FEET.

The feet are liable to so many mishaps and disorders that they need scrupulous care. They should be examined frequently—the careful man will do this daily—to see if any untoward condition exists. The shoes should receive special attention to detect any misfit, looseness, irregular pressure, and the like, and to discover any injuries to the feet and joints from the rims or nails on other feet. They should be drawn and re-set or replaced with new ones at intervals of from four to six weeks. When the horse is turned out, they should be taken entirely away, or should give place to the grazing-shoe.

Heels with little hair should be sponged and carefully dried after a journey, and those with long or thick hair should be cleansed from dirt by hand-rubbing or otherwise. Horses that stand much in the stable should have a dirt floor, and in dry weather their feet may be washed occasionally, but such washing should be done quickly, particularly if the horse

has first been in active exercise, and the feet should be thoroughly dried. Excessive washing and soaking is very injurious. To be sure, it is important that the feet and legs be kept clean, but this can be so well done by thorough brushing and rubbing that frequent washing is unnecessary.

Shoeing.—Few things in the care of the horse are so intimately associated with his comfort and suffering as shoeing. Disorders arising from it are numerous and often impair or destroy his usefulness, as will be shown by a reference to the ailments treated in the preceding pages, particularly those of the extremities. For two reasons no detailed directions will be here given upon this important subject: First, the writer has noticed that such attempts in works similar to this have signally failed in imparting an



195. SECTION OF THE FOOT (see cut 173),



196. The Foot dissected to exhibit Tendons, Blood-Vessels, and other Sensitive Parts. This, with cut 195, shows that the Foot is very susceptible to Injuries.

intelligible idea of even what is needed, this doubtless being due to the fact that shoeing is a matter of practice, not to be learned in the first instance from books; second, even if it were possible to present an adequate treatise for the general reader, he would still be dependent upon the smith. If such smiths were to pay for the horses which they ruin by improper shoeing, it is doubtful whether they would have any profits whatever from this department of their handiwork. It is, however, urged that one do not intrust a service of such great moment to an inexperienced man, but that he repair to one of known intelligence and skill, even if that involves the

taking of his horse a long distance. If one's horse suffers from some acute disease, he will go almost any distance to secure competent counsel, but with strange inconsistency, or thoughtlessness, he will lead him into the shed of any blacksmith who can boast of enough muscle to "hold up any horse," notwithstanding the risk he runs of having the animal permanently injured, or wholly unfitted for use. The foot is a very sensitive member, copiously supplied with delicate layers, blood-vessels and exquisitely fitting bones and tendons, and he is a wise master who most jealously regards this part of his horse's organism. The accompanying cuts will serve to show how complicated and sensitive the foot is, and the writer hopes they will serve to make the reader particularly careful in the choice of a man who shall pare, hammer and nail it.

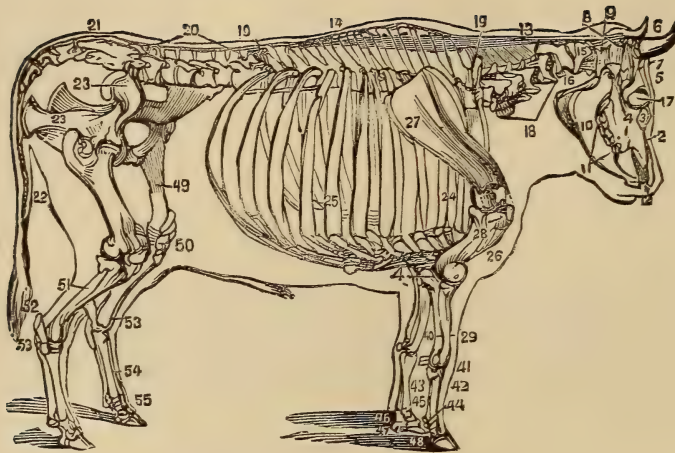




PART III.

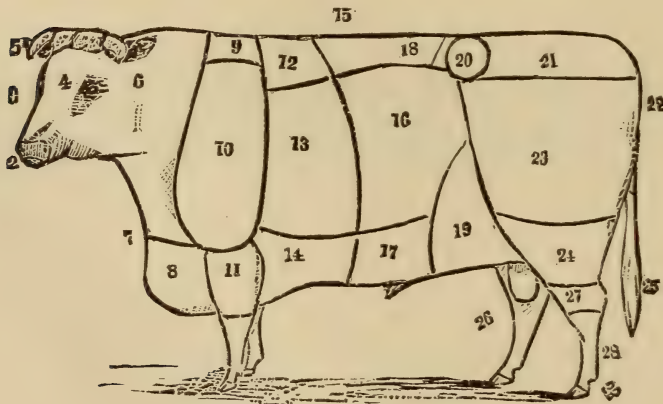
THE OX AND HIS DISEASES.





197. THE BONES OF THE OX.

1, Upper Jaw-Bone. 2, Nasal Bone. 3, Lachrymal Bone. 4, Cheek-Bone. 5, Forehead. 6, Horns. 7, Temporal. 8, Parietal. 9, Occipital. 10, Lower Jaw-Bone. 11, Grinders. 12, Nippers. 13, Ligament of the Neck. 14, Joints of the Back. 15, Atlas. 16, Dentata. 17, Eye-Socket. 18, Vertebrae of the Neck. 19, Vertebrae of the Back. 20, Vertebrae of the Loins. 21, Sacrum. 22, Bones of the Tail. 23, Haunch and Pelvis. 24, Eight True Ribs. 25, False Ribs. 26, Breast-Bone. 27, Shoulder-Blade. 28, Humerus. 29, Radius. 40, Ulna. 41, Bones of the Knee. 42, Shank. 43, Splint. 44, Sesamoid. 45, Large Pasterns. 46, Small Pasterns. 47, Coffin. 48, Navicular. 49, Thigh. 50, Knee-Pan. 51, Tibia. 52, Point of Hock. 53, Small Bones of the Hock. 54, Metatarsal. 55, Pasterns and Feet.



198. SKETCH OF THE OX.

1, Muzzle. 2, Nostrils. 3, Forehead and Face. 4, Eye. 5, Horn and Ear. 6, Neck and Throat. 7, Breast. 8, Brisket. 9, Shoulder-Point. 10, Shoulder. 11, Fore-Arm. 12, Crops. 13, Fore-Ribs. 14, Fore-Flank. 15, Back. 16, Back-Ribs. 17, Belly. 18, Loins. 19, Flank. 20, Hip. 21, Rump. 22, Tail and Seton. 23, Quarters. 24, Thigh. 25, Twist (between the Thighs). 26, Testes. 27, Knee and Gambrel. 28, Leg. 29, Hoof.

PART III.

THE OX AND HIS DISEASES.*

CHAPTER I.

THE NERVOUS SYSTEM.

MAD STAGGERS AND BRAIN FEVER.

MAD staggers and brain fever are quite frequent among cattle, and come on rapidly from exposure to a hot sun or sudden change of temperature; or may follow ill-usage, high feeding, excess of blood, over-driving, or a blow on the head.

Symptoms.—*Mad Staggers* are marked by heaving flanks; wild, red, staring eyes; nostrils enlarged; furious delirium and frenzy; (the animal is unconscious, while in rabies it is not so—a distinction that should be carefully noted); animal exhausted, and finally motionless. *In Brain Fever*, the general symptoms of mad staggers are present, and in addition a marked aversion to red bodies during the frenzy; frightful bellowing; incessant and furious galloping; arched tail; the skin adheres closely to the flesh; spine and adjacent parts very tender; the animal falls headlong, and lies in a stupor; from the first, vivid redness and prominence of the eyes; dullness and drowsiness; thick, heavy, difficult breathing.

TREATMENT.—Give aconite for fever; delirium; red eyes; dry, hot skin. For great heat and swelling of the head, blood-shot eyes, delirium and frenzy, thirst, sensitiveness to light and noise, wild expression, give belladonna, which is also usually serviceable in the beginning, in alternation with aconite at intervals of from one to three hours according to the severity. For stupor, sudden starts, and involuntary passages of dung, give hyoscyamus. Bryonia is needed for stupor with delirium. Opium is demanded

* See "Signs of Health and Disease," Chapter I, Part II.

by stupor with giddiness, half-closed, glassy eyes, constipation, and slow, feeble pulse. Give arnica externally and internally once in an hour, or oftener in extreme cases, if the cause is some external injury.

Gelseminum, a wine-glassful of a mixture of twenty drops of tincture in a pint of water, given every two hours, is valuable in cases resulting from exposure to the sun, with weakness of the muscles and enlarged pupils of the eyes.

For further information, consult this disorder in the Horse. Keep the animal perfectly quiet. When the violence of the symptoms subsides, give soft food that is easily digested and readily taken.

APOPLEXY.

Apoplexy has causes similar to those of Brain Fever, but is much more rapid in its attack. For symptoms, treatment, and general care, consult the article on Brain Fever above, and on Apoplexy in the Horse.

PARALYSIS.

This is a loss of nervous power in the muscles, and may affect one muscle or many. It occurs mainly in old cattle in bleak countries, cold, unhealthy stables, or those exposed to cold after warm stabling.

Symptoms.—Legs, generally the hind ones, cold and weak, then stiff, dragging and resting on the pasterns; then the animal becomes unable to stand and sits on its haunches.

TREATMENT.—Keep the animal warm and well supplied with litter; change to nourishing food; turn the animal over two or three times a day. For further information, consult Paralysis in the Horse.

HYDROPHOBIA.

Hydrophobia occurs more frequently in the cow than in the horse, and results from the bite of a rabid animal.

Symptoms.—Loud and frequent hollow bellowing; stamping and butting; sometimes return of the food into the mouth about the third day; the secretion of milk diminishes; foaming at the mouth; paralysis; death in from four to seven days; *consciousness throughout.*

TREATMENT.—Wash the wound well with warm water and some disinfectant; then burn it with an iron, or apply strong nitric acid. Dress then with a strong carbolic acid lotion, or lime-water and oil. Belladonna and stramonium may afterward be used. When the case is *fully developed* medicine will generally be of little avail.

Tie the animal securely in a close stall, shutting out most of the light and much of the air. Give light, nutritious, condensed food. When a rabid animal has been in a herd, belladonna should be given daily for ten or twelve days to each animal as a protection against possible infection. For further information, see the article on Hydrophobia in the Horse.

LOCK-JAW.

This may result from some general disorder of the stomach, or from injuries (see Lock-jaw in the Horse for detailed causes, noting those to which cattle are subject).

Symptoms.—At first, only some stiffness in the gait, jaws and neck, which afterward grows more marked; fixed, inflamed eyes; hind legs stiff; walking difficult and awkward; quick and labored breathing, the breath being hot; neck and ears very stiff; finally, the whole body is stiff; copious sweats; the general spasm may increase every twelve or twenty-four hours for some time, and then slowly abate, become less regular, and finally disappear; or may grow more violent until a very severe one results in death.

TREATMENT.—For cases occasioned by cold or wet, or depressed general condition, give ten drops of camphor every twenty minutes *in the first stages* until warmth returns to the system. Belladonna is invaluable after camphor, given every hour until the jaws become less rigid, when the interval between doses should be increased. If constipation be present, give nux vomica every four or six hours, or in alternation with belladonna. Constipation is further relieved by injections of warm water and soap. If inflammation occurs, give a few doses of aconite, following with the remedy next demanded by the symptoms mentioned above. If injuries be the cause, give arnica, alone or in alternation with belladonna, aconite or nux vomica, every one, two, three or four hours, according to urgency. Between the paroxysms, the jaws being relaxed, offer food that is easily digested, such as gruel, boiled turnips and oats, mash of boiled grain and bran. Should the animal be unable to eat for some time, clear out the bowels by an injection of tepid water, and inject oatmeal-gruel. For further equally important information, select such as is obviously applicable to the ox from that given on Lock-jaw in the Horse.

CONVULSIONS.—FITS.

This disorder, not common in the ox, may occur in young, well-fed cattle, especially when excited by over-exertion or heat. When it has once occurred, a recurrence is more liable to ensue.

TREATMENT.—Give belladonna every two or three hours. Opium may be serviceable if there be stupor and hard, heavy breathing. Keep the animal in a large stable where there is little chance for it to injure itself. For full directions, consult all that is said on Convulsions in the Horse.

GIDDINESS.—DIZZINESS.

This occurs more frequently in draught-oxen, and is caused by hard labor in a hot sun, or a tight, ill-fitting or squeezing yoke.

Symptoms.—Tottering and falling, the animal lying outstretched and motionless. It may be easily distinguished from Convulsions, for in the latter there are violent convulsive movements. For full particulars, consult the appropriate article on the Horse as given in Part II.

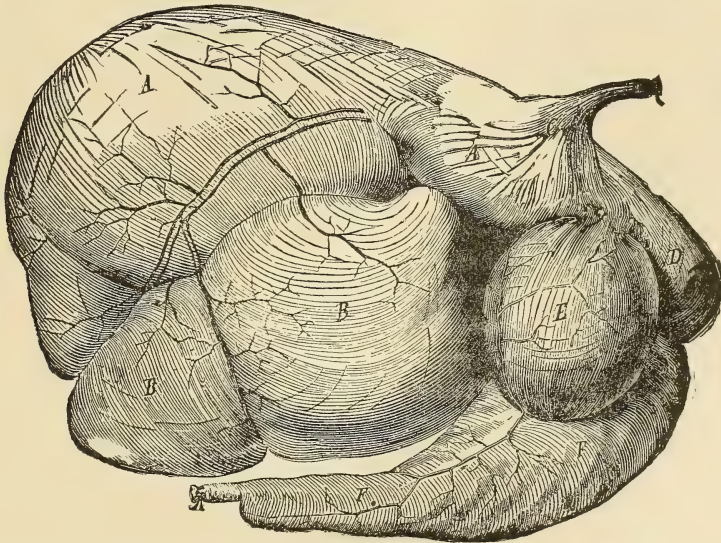


CHAPTER II.

THE DIGESTIVE ORGANS.

ANATOMY AND PHYSIOLOGY.

THE stomach of the ox, sheep and other ruminants is so peculiar as to call for special mention. It consists of four so-called stomachs. The first, known as the *rumen*, or paunch, is much the largest; its mucous membrane is rough, with elevations or papillæ, and is protected by a dense, scaly membrane. The second stomach, called the *reticulum*, or honey-comb, is the smallest of the four, and is connected with the



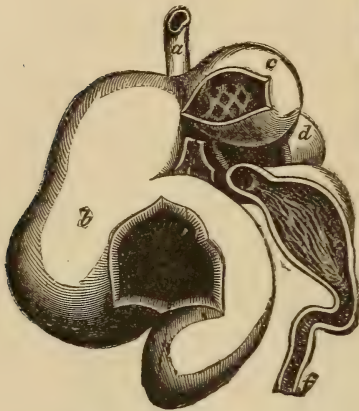
153. STOMACH OF THE OX.

A, Rumen (left half). B, Rumen (right half). C, Lower end of the Œsophagus. D, Reticulum. E, Omasum. F, Abomasum.

front part of the paunch, with which it freely communicates. The third stomach is named the *omasum*, or maniplies, the latter term being derived from the many folds of the membranes; its numerous membranes are of

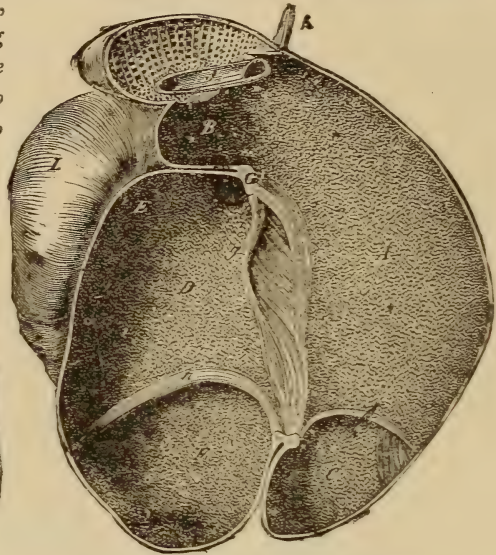
different sizes, and their surfaces are copiously supplied with papillæ; its contents are dry. The fourth stomach, called the *abomasum*, or rennet, performs substantially the same functions as that of man, is larger than the second and third but smaller than the first, is covered with a thick, velvety coat that has ridges similar to those of the omasum, and secretes an acid that is necessary to digestion.

The first three stomachs are involved in the process of rumination. Crushed food passes first into the rumen, or paunch, and is there heated in saliva, mucus and other secretions, its toughness determining the time it is to be so retained. The food next enters the reticulum, where the softening and dissolving are continued, being aided by a slow churning movement. *Fluids that are swallowed pass directly into this organ without going to*



154. STOMACH OF THE OX, exposing parts of the interior.

a, Esophagus. b, Rumen. c, Reticulum. d, Omasum. e, Abomasum. f, Duodenum.



155. SECTION OF THE STOMACH OF THE OX.

A, Left Sac of the Rumen. B, Front extremity of the same turned back on the Right Sac, its rear extremity being C. D, Section of the front Pillar of the Rumen. E, Its two upper branches. F, Rear Pillar of the same. G, H, H, Its three lower branches. I, Cells of the Reticulum. J, Furrow of the Esophagus. K, Esophagus. L, Abomasum.

the paunch. In this stomach secretions ferment the food or produce other chemical changes, reducing the contents to a pulpy mass. In the next place the food passes back to the teeth and is thoroughly masticated, this process being known as *rumination*, or "chewing the cud." The return of the food is easily detected, for one may see large masses pass up the gullet which is distended as in swallowing, though the movement is in the opposite direction. When the food passes into the mouth its liquid parts are immediately swallowed into the first three stomachs; and the solid food

is slowly ground by the teeth a longer or shorter time according to its toughness. When sufficiently ground the food is again swallowed, some into the first two stomachs, but the greater part into the third, thence into the fourth where the digestion is completed. Because of the tendency of liquids to pass directly into the second or third stomach there is some danger that in administering medicine by drenches or other mechanical means the desired results may be defeated, and even damage be incurred. Hence, in giving medicine to the ox or sheep it is always best when possible to induce the animal to swallow it voluntarily.

HOOVE.—GRAIN OR CLOVER SICKNESS.

This is a distension of the stomach caused by decomposition or fermentation of food, or by eating unusual articles of food. Rich grazing after poor or scanty food, wet grass in warm weather, fodder heated by being heaped up when wet, drinking cold water excessively, eating too much grain, bran, chaff, raw potatoes and oats, or boiled turnips, may cause the disorder.

Symptoms.—These appear soon and suddenly; loss of appetite and cud; whole body swollen, especially at the flanks, which give forth a drum-like sound when struck; sour and noisy belchings; moans and distress; animal stands still; short, difficult breathing; nostrils spread; threatened suffocation; the pulse grows harder, fuller and quicker; mouth hot and full of frothy slobber; eyes glazed, fixed, and blood-shot; the tongue hangs; veins of the neck and chest swollen; back arched; legs drawn under the body; tail curved; protruding anus; cold sweat; the animal finally totters, falls, struggles, discharges sour fluid and solid food from the nose and mouth; suffocation or rupture of the stomach, leading to death.

The distension of the stomach by gas may be distinguished from that arising from impacted food by a study of the table here used, which is taken from the excellent work of Lord and Rush.

DISTENSION FROM GAS.

The left flank, on pressure, feels soft, elastic, and yielding to the fingers. On percussion, sounds hollow and drum-like.

Frequent belching; the wind which escapes has an offensive smell.

Respiration quick, short and puffing.

Position: Standing; head stretched forward; unable to move; moans, and appears in great distress; eyes red and staring.

DISTENSION FROM IMPACTED FOOD.

The left flank, on pressure, feels solid; does not yield readily to the fingers on percussion; on being struck, sounds dull.

No belching or eructation of wind.

Respiration not much interfered with.

Position: Lying down, and is with difficulty induced to move; looking dull and listless.

TREATMENT.—At first give ammonium causticum, ten drops every ten or fifteen minutes. Colchicum rarely fails, particularly in cases resulting from vegetable food. Repeat it several times if necessary. It is valuable, in alternation with arsenicum, in chronic hoove. Colocynth is beneficial, given every twenty minutes. If the lungs are much implicated, give bryonia in alternation with aconite. For founder from wet clover, a mouthful or two of corn on the cob is a popular and valuable remedy, often sufficient without other expedients. When matters have become improved, allow no food or water for several hours, and these should be sparing for some time afterward. Give nux vomica two or three times daily until the animal is fully cured.

Stabbing or puncturing in very urgent cases may be required, but should be resorted to only then. It is best to use a trocar, sufficiently long to prevent the paunch from slipping away from it. In the absence of this a long, sharp-pointed penknife may be used. At a point midway between the ribs and the hips insert the knife, pointing it inward and downward, where the rumen is most prominent, insert a quill or other tube into the opening at once; or in the absence of such, hold the wound open with a smooth stick until the gas has escaped. With this gas solid food may come out; and here is the danger, and not in the wound itself. Should this food escape into the abdomen instead of passing out freely, it will cause inflammation of the abdominal organs; or, as another difficulty, the kidneys or spleen may be pierced. After such relief, chloride of lime is valuable, two drachms being mixed in a quart of water and thus administered.

GRASS STAGGERS.—DRY MURRAIN.

This results from a retention of food in the third stomach, instead of its passage into the fourth stomach. Fine, dry, hard matters become tightly compressed in some cases, and so closely adhere to the mucous membranes of the folds that their removal causes the loss of the thick membrane which lines the organ; in other cases, soft, souring masses are inclosed in the folds. In either case, nutrient food is not passed into the fourth stomach. Sometimes the folds are gangrenous, and the fourth stomach highly inflamed. It is occasionally epidemic, and its causes are supposed to be bad or coarse food, and sudden changes of diet.

Symptoms.—Excitement, perhaps delirium, followed by dullness and quietness; hanging head; indifference; dry muzzle; hanging tongue; prominent red eyes; constipation; red nasal membrane; high-colored urine; rapid, hard pulse; stoppage of milk, or it becomes poor; later, trembling; loss of consciousness; swollen belly; cold limbs; death.

TREATMENT.—For high fever, quick pulse, dry, hot muzzle, very hot horns and ears, and varying temperature of limbs, ears and muzzle, give aconite. Give *nux vomica* in alternation with aconite, every three or four hours until the fever subsides, then alone three or four times a day. Arsenicum and sulphur will be needed in some cases, particularly when the dung is thin, watery and offensive. If the case has been neglected, or is symptomatic of another disorder, or has become chronic, it will take a good while for the stomach to return to its normal condition. Make a complete change in diet and allow only such food as is easily digested.

ULCERATED MOUTH.

This is contagious and often attacks a whole herd.

Symptoms.—Red, hot mouth; diminished appetite and milk, the latter being watery; in a few days a small red eruption in the mouth, which enlarges to various sizes, becoming white, bursting, and leaving a scab; eating stopped; drinking with dribbles. If the tongue, in mild cases, does not gradually cleanse, the sores join and become of a leaden color, leaving corroding ulcers which carry off small pieces of the membrane; inflamed throat; cough; offensive breath; loss of flesh.

TREATMENT.—Give mercurius three times daily. If the disease does not yield, give one grain of antimonium tartaricum two or three times daily. Sulphur may be required if there be dry, hot mouth; offensive breath; ulcerations with scabs. Rinse the mouth with Condyl's Fluid.

THRUSH.

Thrush is an inflammatory fungoid disorder, consisting in minute vesicles which end in white sloughs in the mouth and discharge a fluid, after which they become ulcers that run together; the lining peels off, leaving a tender surface that prevents eating. There is a profuse flow of stringy saliva from the mouth and loss of flesh. It is caused by poor food, irritating plants, or constitutional disease; in calves, by the mother's milk. These symptoms should be observed carefully, that thrush may not be mistaken for Rinderpest. From Foot and Mouth Disease it is known by its not being epidemic or contagious, or associated with disease of the feet and teats. Thrush usually attacks calves.

TREATMENT.—If the tongue or mouth is covered with blisters, and stringy saliva flows from the mouth, give mercurius every four hours until the case is improved. In the first stages, the vesicles may be removed by washing the mouth three times daily with a solution of chlorate of potassa,

ten grains to an ounce or water, and as often giving a tablespoonful of a mixture of ten drops of kali bichromicum to one pint of water. When the worst symptoms have yielded to mercurius or other remedies, and the animal remains poor, dull, and with loss of appetite, give three grains of arsenicum three times daily. Muriatic acid, phosphoric acid, and borax may be found of service. In case of calves, give the mother a clean, comfortable stable, and administer sulphur to her; give the same to the calf, night and morning, for a few days after the disease has subsided.

INFLAMMATION OF THE TONGUE.

This is caused by some wound, and is indicated by a great swelling of the tongue, the latter hanging out of the mouth; feeding is stopped; the tongue sometimes becomes hard; perhaps swelling of the throat.

TREATMENT.—Give mercurius if there is great swelling of the tongue and throat, and aconite if there is much fever. If the inflammation be dry, give nitric acid. For hardness of the tongue give carbo vegetabilis. If the tongue is injured, give arnica, and wash the mouth with a weak lotion of the same; in these cases arsenicum and lachesis are also serviceable.

GLOSS ANTHRAX.—BLACK TONGUE.—BLAIN.

This is connected with some peculiar state of the atmosphere, and is highly contagious and usually fatal, being communicable even to man.

Symptoms.—It is sudden in its attacks. There are profuse saliva, swollen tongue, general distress and fever; on the tongue are small vesicles full of matter, or tubercles surrounded with a bluish circle; the vesicles burst and give out offensive matter; on the tubercles are yellowish-white pustules, sometimes the size of a nut, which turn brown; these are filled with a thin, corroding fluid, which inflames and destroys the surrounding parts; the head and throat swell enormously; breathing obstructed; threatened or actual suffocation; large ulcers may form on and near the tongue, so that it is wholly gangrenous and insensible, gives out no blood when cut, and falls away piece by piece. Occasionally ulcers form in the feet, discharging offensive matter. A low typhus-condition ensues in severe cases, and death occurs with great suffering, shivering, and swelling of the belly.

TREATMENT.—*Take the case in its first stages*, or it will probably be too late, especially if the vesicles have broken and some of their contents have been swallowed. Mercurius is desirable for whitish pustules; canker; ulcerated mouth and tongue; red, offensive discharge, and *profuse*

saliva. Give arsenicum, ten drops every three hours, for bleeding from the nostrils; threatened gangrene; small, rapid pulse; offensiveness in the mouth; weakness; diarrhœa; cold extremities; drowsiness. Midway between the doses give the mouth a thorough washing with carbolic-acid lotion. This may be given in alternation with mercurius. Should the remedies named fail, put two grains of carbolic acid in a little water, and give the dilution once every two hours. If there be a full, hard pulse, dry, hot skin, much thirst, red, swollen eyes, head and mouth, give aconite every two hours. If three or four doses effect an improvement, but drowsiness, wildness of look, and swelling of the head, tongue and throat remain, alternate aconite and belladonna. If no such improvement occurs, give bryonia every three or four hours, alone or alternated with rhus. For drowsiness, exhaustion, and involuntary or bloody diarrhœa, give phosphoric acid. Opium is needed if there be hot, dry skin, small, rapid pulse, drowsiness, and involuntary diarrhœa. Give good gruel in small quantities, or other simple, nutritious food, pouring it gently down the throat if it is refused (to do which a horn will seldom be required); and leave some at hand for the animal to take if it will. *Keep the animal away from others.*

Caution.—Attendants have been infected with the virus with fatal results. Before handling the animal or the objects which it touches, cover the hands with gloves or oil, or both, and take special pains to prevent any sore on the hands or other parts from touching the animal. These cautions suggest the necessity of keeping other domestic animals at a safe distance from the stall, drinking-trough, dishes, or other articles, and from the pasture in which the infected one has been.

LOSS OF APPETITE.—LOSS OF CUD.

If this occurs without other marks of sickness, examine the food to see if it is perfectly good, and the mouth to discover disordered teeth, ulcers, injuries, thrush, inflammation, or foreign substances. These are causes, as well as an overloaded stomach, poor digestion, and over-exertion.

TREATMENT.—If poor food be the cause, and the animal be weak and dull, or if there be diarrhœa, give arsenicum a half-hour before feeding night and morning, for a week or two. If there be poor digestion, dry, and hard dung and constipation, give nux vomica instead of arsenicum. If there be added to loss of appetite, diarrhœa, cold feet and loss of thirst, give pulsatilla. If some disease be the cause, that must be treated first. Do not compel a sick animal to eat. Be sure that the food is perfectly good. A change of diet will often be sufficient.

EXCESSIVE OR DEPRAVED APPETITE.

Either of these conditions indicates a bad state of the system. The animal may eat greedily, and even take uncommon food, but still grows lean.

TREATMENT.—Give *pulsatilla* every few hours for four or five days; *sepia* and *nux vomica* will also be of service. *Cina* is needed if worms are the cause. Give cold water and good fresh food, not in excessive quantities.

INDIGESTION.

Indigestion results from greedy eating after a long fast; poor or irregular food; abrupt transitions from dry to green feed, or from green to dry; insufficient feeding; impure water; pasturing in fields wet with dew; in calves, excess of improper food, such as bran and water, when weaned too soon.

Symptoms.—Loss of appetite, cud, and (in cows) of the milk; aversion to food; belching; foul, coated tongue; colic; hard and infrequent passages of dung; sometimes diarrhœa.

TREATMENT.—*Aconite* and *nux vomica* are needed for quick pulse, hot horns and ears, and variable temperature of the limbs, given alternately every three or four hours. For distended paunch give ammonium causticum. For much debility and diarrhœa use arsenicum; in some cases it is better to alternate it with china, especially if diarrhœa has stopped. If the cud is lost, the dung soft and offensive, and the animal coughs and moans, give *pulsatilla*. Feed bran and boiled oats, and if hay is given, it is better to soften it in hot water, allowing the animal to drink the remaining fluid. Give calves rye bran, or boiled wheat, not leaving any to sour.

INFLAMMATION OF THE STOMACH.—GASTRITIS.

Inflammation of the stomach is a disorder of the lining membrane of the fourth stomach (see page 736), generally involving the duodenum, and usually accompanying inflammation of the bowels. It is frequently fatal. For its causes, read those given under Inflammation of the Bowels.

Symptoms.—Dejection; scraping the ground with the fore feet; striking the belly with the hind feet; groans; lowings; grinding teeth; red eyes; looking at the flanks; cold feet, ears and horns; dry muzzle; belly swollen and tender; vomiting; diarrhœa; milk thin, yellowish, stringy and irritating, or wholly stopped, sometimes reddish and offensive; spasm and colic, sometimes creating frenzy; loss of appetite and cud; tongue contracted, straighter and rounder than usual, occasionally yellow or green.

TREATMENT.—In the first place give aconite every thirty or sixty minutes if the pain is severe; the extremities very hot and cold alternately; the pulse full and quick; the body tender. It should be continued at longer intervals if the animal improves under it. Next give bryonia; it may be alternated with aconite if there be intense pain in the belly and costiveness. For heavy breathing, grunting, constipation, dejection and pains, give nux vomica. Antimonium crudum is desirable for white or yellowish tongue. For much vomiting ipecac is needed. Give belladonna and hyoscyamus in alternation every two or three hours for delirium and loss of consciousness. Opium is needed for great stupor, and when other medicines fail. For cold extremities and rapid decline of strength give arsenicum and veratrum in alternation every two or three hours. No solid food should be allowed until improvement has commenced. Before that, give small quantities of fluid food, as oatmeal or flour gruel and water.

WOOD-EVIL.—RED-WATER.—MOOR-ILL.

Moor-ill is an inflammation of the fourth stomach (see page 736), frequently involving the lungs, and attended with fullness of the maniplies. It is caused by marshy pasturage, frozen roots and herbs, bad winter food, and buds of trees eaten in spring after long feeding on dry winter fodder.

Symptoms.—Dejection; fever; stumbling with hind feet; hot surface and breath; quick, hard pulse; staring coat; dry nose and mouth; constant thirst; eyes and nostrils red; hide-bound; chewing of cud rare and slow; scanty, bloody, dry and black dung; scanty, high-colored, bloody and strong-smelling urine; offensive milk; depraved appetite, sticks, bones, and the like being taken into the mouth; loss of flesh; weak, trembling loins; heaving flanks; moans; internal pains; the animal remains still; chest and shoulders stiff; marks of congestion of the brain; sometimes diarrhœa, the dung being offensive, bloody and blackish; inability to rise; general coldness; gangrene; death.

TREATMENT.—Give aconite at the commencement, every two, three, or four hours, according to the urgency of the fever-symptoms. Give mercurius for offensive, bloody dung. If the discharges are made with violent straining, give mercurius corrosivus. When improvement sets in, give sulphur to complete the cure. For other remedies with their symptoms, and for the diet, consult the treatment of Indigestion and Grass Staggers. With a view to prevention, improve the drainage of the field, avoid damp pastures in the spring until a good growth is afforded, and discard hay which has hurtful plants in it.

INFLAMMATION OF THE BOWELS.—ENTERITIS.

Inflammation of the bowels is an inflamed condition of some or all of the parts of the intestines, which sometimes appears to be epidemic, and is most prevalent in hot weather. Among its causes are too stimulating or rich diet, especially after poor food; unwholesome plants; spoiled food; colds; drinking cold water when the animal is heated; injuries to the belly; worms in the bowels; badly-treated colic; injuries from the rolling incident to colic.

Symptoms.—Dullness; shivering; pulse quickened, hard, and small, growing more feeble; staring coat; belly swollen on the left side; dry muzzle; hot mouth; great thirst; tenderness about the flanks and stomach; red, prominent eyes; painful moaning; cud suspended; intense pain, with indisposition to move; obstinate constipation; dung disgusting, passed with straining, and covered with mucus or blood, but usually in small, watery quantities; urine very scanty, with frequent attempts to discharge it; heaving flanks; pawing and kicking; head stretched forward; ears and roots of the horns hot; dry, hot mouth, in later stages filled with frothy saliva; rapid decline of strength; trembling, tottering hind quarters; loss of motion; convulsions; grinding teeth; tongue covered with thick, yellowish mucus; sometimes putrid, bloody discharges from the mouth and nose; death, often in violent convulsions. If in a few days the pain suddenly ceases, mortification has commenced and death soon ensues.

It is important to distinguish Enteritis from Colic, and in doing this the reader will be materially aided by an examination of the appended parallel tables of symptoms.

ENTERITIS.	COLIC.
The disorder generally comes on gradually.	The attack is sudden.
The pain is incessant and increases.	The pain is intermittent.
The pain is aggravated by friction and movement.	The pain is relieved by friction and motion.
Weakness is very characteristic.	Weakness is not a characteristic till near the end of the disorder.

TREATMENT.—The first and chief remedy is aconite, three or four times an hour for a short time, and once every three or four hours after improvement begins until the cure is completed. For intense suffering, nearly imperceptible pulse, cold mouth, and decline of the constitution, give arsenicum every half-hour for a few doses; or alternate it with aconite as often. In cases

resulting from a heated animal drinking cold water, arsenicum is called for by weakness, low pulse, restlessness, cold mouth, diarrhœa, and cold legs. Should the use of aconite at the beginning give only partial relief, and the symptoms calling for arsenicum are not present, except that of intense pain, give bryonia. For constipation, or dung passed only with much effort, and but a few drops of urine resulting from frequent attempts to pass it, give nux vomica every half-hour for a few times, then less often when relieved. For disorders of the urine cantharis may sometimes be given; and ipecac, pulsatilla, or veratrum album for diarrhœa.

General Care.—Cloths soaked in hot water and bound closely with belts on the body, but not too tightly, accompanied with hot-water drenches or injections, will prove valuable aids; but the water must not be scalding hot. The local application, with aconite given as directed above, is the best treatment in the early stages. After the local applications, rub the animal and cover it with dry cloths. Linseed-tea or oatmeal-gruel is the best diet. For other suggestions of value, refer to Inflammation of the Bowels in the Horse.

COLIC.

Colic is very frequent among cattle. It consists in severe pains in the bowels, which are liable to lead to inflammation of the digestive organs. Its main causes are sudden changes from grass to dry food, or from dry to green food; sudden exposure to draughts, or drinking cold water when the animal is heated; too much green food, especially if the animal be heated; poor grain; frosty grass; grass fermented after being cut; excessive eating by greedy animals; worms in the bowels. Sometimes the cause can not be determined.

Symptoms.—The animal refuses food, paws, kicks itself, looks at its side, lies down and rises frequently; sometimes falls instantaneously and heavily, rolls over, lies on the back with the legs stretched upward; feet, ears and horns alternately hot and cold; constipation; thirst; swollen paunch; acute pain. If the disease grows worse, inflammation of the bowels sets in. (Compare the parallel tables of symptoms given under Inflammation of the Bowels.)

TREATMENT.—Ammonium causticum, given every half-hour, may be the only remedy required, especially if it be given at the beginning. Aconite should be given for extreme fever and restlessness, with frequent but fruitless attempts to urinate. If a dose be given as soon as the attack comes on, and repeated four times an hour until the symptoms subside, then less often, it will usually be sufficient. Should the case be no better after a few doses

of aconite, and there be purging, great prostration, and other violent indications, give arsenicum three times an hour. Nux vomica is valuable, especially when a change of diet is the cause, for colic with constipation; discharges of small, brownish balls of dung, with mucus; attempts to urinate ineffectual, or only producing slight results. Give a dose two or three times an hour. Colocynth is desirable for severe pain from green food, and belly puffed out with gas. Injections of tepid water, renewed as often as they are expelled from the rectum, are valuable aids. Keep the animal from falling heavily, to prevent rupture of internal organs. Lead him about and, if he threatens to so fall, whip him or otherwise forcibly drive him. When at rest, keep a large supply of straw under him. After the disorder has subsided, give sparingly of easily-digested food until the system is fully restored. Other suggestions will be found by referring to the subject of Colic in the Horse.

DYSENTERY.

Dysentery, or inflammation of the membrane of the large intestine, results from a variety of causes, such as damp, rank grass; marshy pastures; sudden changes of weather; impure water, especially when a heated animal drinks it; other diseases.

Symptoms.—Sometimes diarrhœa or colic first appears; sometimes purging is sudden, severe and constant, with straining; griping; bloody dung; protrusion of the intestine, which appears hot and swollen; fever; tenderness of the belly and loins; violent straining; loss of appetite and flesh; skin and hair rough, dry and harsh; milk stopped; sometimes constipation first appears, the dung being dry, hard, scanty and knotty. When inflammation sets in, the dung is discharged more suddenly and violently in spurts, becoming stringy and sticky and forming crusts on the hind parts, and this form sometimes assumes a chronic character, with more or less appearance of occasional recovery. Still later, blood is mixed with the dung, the latter soon becoming exceedingly offensive; glandular swellings form at the jaws; cold sweats ensue, the anus is ulcerated, the teeth are loose, and the eyes are glassy and filmy.

TREATMENT.—Mercurius corrosivus is needed for violent straining and discharges of blood, or of blood and mucus. When there are pains and a swollen belly, colocynth may be given. Mild cases resemble diarrhœa so much that they should receive the same treatment. (See Diarrhœa.) Severe cases resemble Typhus Fever (which consult). For other information, see Dysentery in the Horse. A little mutton-broth mixed in mash will be found of much service.

DIARRHŒA.

This is caused by improper food; foul water; drinking cold, strange water; damp and cold weather; drinking just after eating; weakened constitution; other diseases; in sucking calves, the milk of the mother when she has been improperly fed or overheated.

Symptoms.—Dung loose, becoming liquid, and spurted some distance; pain; loss of appetite, flesh and spirits; offensive dung.

TREATMENT.—Should the case be mild and not attended with pain, the spirits, flesh and appetite little affected, and the dung not offensive, it need cause no alarm, as nature is probably removing an unhealthy condition. When the case is violent or long-continued, remedies are necessary. When cold is the cause, or in recent cases with shivering, give fifteen to twenty drops of camphor three or four times a day in a little cold flour-gruel. Before putting it into the gruel, mix it in just enough spirits of wine and water (not pure water) to hold it in solution, without “settlings.” If the dung be mixed with mucus and passed without griping pains, or when it is frothy, dark and slimy, or when the rectum protrudes, mercurius is needed. If the purging arises from drinking cold water, from exposure to sudden changes of temperature, or from impure water, and is attended with chills, bryonia will be found efficacious. Arsenicum is demanded by great pain in the bowels; watery, slimy, greenish or brownish dung; weakness; loss of flesh and appetite; especially in cases caused by unsuitable food or cold drinks. It may be given in alternation with mercurius for symptoms indicating that remedy. Phosphorus, in doses of four or five drops, is excellent. Sulphuric acid is good for chronic forms, two or three drops of the concentrated acid being given in a half-pint of water two or three times daily. Veratrum is good for both ordinary and chronic forms. Pulsatilla is invaluable for calves affected by the milk. Sulphur in one-grain doses should be given occasionally after recovery occurs. Give only soft, boiled food, as gruels of flour or oatmeal, and other like articles.

CONSTIPATION.—COSTIVENESS.

Constipation generally results from some other disorder, but may exist alone, and be caused by cold or irregular feeding. The bowels are bound, and what dung passes is dry and hard; the appetite is impaired; the animal is uneasy, showing signs of belly-ache.

TREATMENT.—Give sulphur, alone, or in alternation with aconite. Allow only soft, boiled food. For other suggestions consult the section on Indigestion; also that on Constipation in the Horse.

MARASMUS.

Marasmus is a tuberculous growth in the intestines which destroys their structure. It occasionally occurs in calves. It is usually caused by some chronic disease.

Symptoms.—Weakness; wasting away, though the animal may ruminate and may eat heartily, even voraciously; the skin sticks to the ribs; the hair loses its luster; diarrhœa, with foul dung.

TREATMENT.—Give arsenicum and china, separately or in alternation. Silicea, calcarea carbonica, phosphorus and hydrastis are all good. Sulphur should be given to complete a cure when it has commenced.

INFLAMMATION OF THE LIVER.

Though this disorder is not very common, it is found in animals that are stall-fed on high food and deprived of adequate exercise, and occurs mainly in winter.

Symptoms.—In the acute form there will be considerable fever; quick pulse; increased heat of the body; eyes, tongue, mouth, nose and teats yellow; dry muzzle; hot mouth; ears and horns alternately cold and hot; belly swollen and tender, particularly on the right side; constipation or violent purging; urine deep yellow; milk bitter and yellowish, or lessened, ropy and salty; general functions feeble. This form lasts about two weeks. In the *chronic* form the fever is weak or absent; the dung is scanty, hard and clay-like; the milk separates into watery and cheesy elements; there is a very marked and general yellowish hue in the skin; there is a loss of flesh, strength and spirits; the animal is hide-bound; great distress comes on, and may be followed by death. This form may last several months. Compare the symptoms of Jaundice below.

TREATMENT.—Mercurius is needed for yellow tint; dung offensive, hard, whitish or yellowish; or fluid dung. For costiveness with severe pain, fever, and thickly-coated tongue, give bryonia and mercurius in alternation. Nux vomica may be given with bryonia for constipation and high-colored urine. In chronic cases lycopodium is serviceable. Give juicy, nutritious food.

JAUNDICE.

Jaundice arises from a morbid state of the liver, as hardening or inflammation, from gall-stones, or other obstruction to the passage of the gall to the gall-bladder. It is liable to confusion with Inflammation of the Liver, which is mentioned above.

Symptoms.—These vary according to the severity of the case, and the successive stages, but some or all of the following will occur:—Poor appetite; thinness; quick breath; tender side; cud chewed imperfectly; membranes of the mouth, nose and eyes yellow; tongue lined with sticky mucus; diminished milk, which is bitter and yellowish; yellow skin, urine and dung; hot skin and other fever-symptoms; scaly, mangy eruptions (*not seen in inflammation of the liver.*)

TREATMENT.—Give mercurius every three or four hours, especially for yellowness of the eyes, skin, urine and milk, and for excessive purging; or if the dung be whitish. Podophyllin should be substituted for mercurius if that remedy fails or has been given in undue quantities for any purpose. Arsenicum is to be administered for loss of appetite and cud, scanty urine, and great prostration. For marked constipation give bryonia and nux vomica in alternation every three hours. To complete the cure and restore the system, sulphur will be invaluable. The food should be juicy and nutritious, consisting of cut carrots, potatoes, turnips, and the like. Pastures which contain dandelion are efficacious, and the young and tender grass of spring-time will sometimes be sufficient at that season of the year. Keep the bowels in a moderately lax condition. Further directions will be found in the treatment of Jaundice in the Horse.

INFLAMMATION OF THE SPLEEN.

This occasionally affects oxen, bringing on death in three or four days from the onset. It is generally a complication of some other disease, but may be caused by over-work after feeding, the cud not being sufficiently chewed. It is especially common in damp, cold weather, though sometimes in very dry conditions.

Symptoms.—Pain in the belly; tender flanks; swelling on the side and flank (less however than that in Hoove, coming on less rapidly, and giving a deep, heavy sound when struck, instead of a clear, hollow one, as in Hoove); loss of appetite and cud; dry, rough muzzle; fixed look; low moans; extended head; difficult gait; pulse at first full and hard, then soft and very small.

TREATMENT.—Give bryonia for fever, thirst, constipation, and brown tongue, either alone or, if there be nervousness and deep, shaking breathing, in alternation with aconite. China is good for hardness and swelling in the parts about the liver. If the region of the spleen is tender and the animal often looks toward it, give nux vomica. If the disease becomes chronic, give one or two doses daily of ferrum or sulphur. Mild, nutritious food is necessary.

PERITONITIS.

Peritonitis is an inflammation of the membrane which envelops the abdominal vitals, and generally ends fatally in about a week. It is similar to Inflammation of the Bowels, and the reader is referred to that disease for important suggestions. It is caused by injuries to the walls of the abdomen, castration, surgical operations, sudden cold, and stimulating food after calving.

Symptoms.—Inflammatory fever; tender abdomen; swelling of the belly; tightness of the flanks; the animal looks at the sides, seldom lies down, and stands with the back bent down and the feet drawn under the body; when down, it rolls on the back; hot abdomen; cold hoofs and ears; pulse rapid and short; cessation of pain, rapid decline and intermittent pulse indicate mortification and imminent death. Dropsy of the belly may be the result.

TREATMENT.—Adopt the treatment of Peritonitis in the Horse.

PROTRUSION OR FALL OF THE RECTUM.

The bowel sometimes protrudes after diarrhœa, dysentery or constipation, or may do so independently.

TREATMENT.—After gently pushing back the rectum it may be necessary to secure it by an operation of the surgeon. If a mechanical injury be the cause, give arnica, alone or in alternation with aconite. When diarrhœa is the origin of the trouble, give arsenicum. For further information when diarrhœa or dysentery is the cause, consult the sections devoted to those.

WORMS.

Worms of various kinds are found in cattle, and are caused by weakness of the digestive organs, morbid secretion of mucus, and disordered lungs and liver.

Symptoms.—Colicky pains; poor condition; appetite good, perhaps voracious; restlessness, particularly when the stomach is empty; fits; coughs; worms in the dung, *the only certain symptom*. Many symptoms of other diseases are supposed to be caused by worms, while the worms may increase merely by the existence of such symptoms.

TREATMENT.—Give sound, nutritious food, administer cina night and morning for a few days, an hour before feeding, for varying appetite; tight or purging bowels; rough coat; fits; foul breath. If improvement appears, continue this remedy. If it fails or only partially relieves, give two-

grain doses of the trituration of arsenicum as directed for cina. For *tape-worm*, felix mas is the most effectual, a half-ounce of a decoction being given early in the morning and late at night. Rock-salt, a lump being placed where the animals can lick it, is recommended as a preventive of worms. Consult the section on Worms in the Horse.

FLUKES.—WORMS IN THE LIVER.

Worms in the liver or bile-ducts sometimes cause great swelling of the liver, and usually prove fatal. They occur mainly in low countries and after damp seasons, and may be taken in with the food and developed in the liver.

Symptoms.—Depression; inactivity; red, watery, or yellowish eyes; yellowish skin; standing hair; loss of appetite; offensive smell from the mouth and nose; white, watery, offensive dung passes irregularly.

TREATMENT.—Give mercurius for the symptoms just named. Arsenicum is good for chronic cases, with diarrhœa, prostration and cold limbs. Sulphur is needed to complete a cure, when once it begins.

PILES, DUST-BALLS, ETC.

For Piles, Dust-Balls, Hair-Balls, and other disorders of the digestive organs which are not treated in this chapter, consult the respective sections devoted to these disorders in the Horse.



CHAPTER III.

THE RESPIRATORY ORGANS.

COUGH.

COUGH is usually a symptom of some disease, but it may exist independently. In the former case it is remedied by the removal of the disease; in the latter, the treatment below will generally cure it. In a healthy condition, cattle often have a cough which is not constrained and causes no inconvenience. The independent cough which demands treatment is caused by dust; indigestion; some substance in the wind-pipe; cold. If it be dull, hollow, worse after drinking, and easily excited, the cause is probably lung-disorder, or, if it be severe, it may result from dropsy of the chest.

TREATMENT.—Give belladonna in most cases, especially for dry, hacking or barking cough. Dulcamara is needed for loose cough from a cold. For cough attended with diarrhœa, give chamomilla. Ipecac is good for difficult breathing, phlegm, and rattling of the chest. Give arsenicum for oppressed breathing, worse on exposure to cold; loss of strength and flesh. For long-standing cases, for dry, rough cough, and for that caused by frost, give bryonia. Sulphur is suitable for long-continued, obstinate cough. It may be alternated with one of the above remedies which has not effected the desired result. Of these remedies give a dose three or four times a day until improvement begins; then once or twice a day. Keep the animal in a place that is comfortable, well ventilated, and free from draughts of air and north or east winds. Give only good food, as carrots and linseed-tea.

COLD.—CATARRH.—CORYZA.

Common cold or catarrh is caused by exposure to draughts of air, or drinking cold water, when the animal is heated; sudden changes of weather; cold water applied to the skin of a heated animal, without subsequently drying; cold, wet weather; hot, close, impure and overcrowded

stables; causes generally which bring on bronchitis (which see). It is often epidemic.

Symptoms.—Fever; loss of appetite; dry, husky, wheezing cough and breathing; dry nose, with thin, watery discharge from the nostrils and eyes; sneezing; red, swollen eyes; sometimes thick nasal discharge; low spirits. If neglected, cold may end in diseases of the larynx and lungs.

TREATMENT.—Camphor is by far the best if used promptly at first, being given once a day. For sore throat and thick, offensive nasal discharge, give mercurius, alone or alternated with belladonna. For constipation and impaired appetite nux vomica will be invaluable. For short, painful breathing, violent coughs, and unwillingness to move, bryonia is needed. Arsenicum is to be chosen for cold resulting from a heated animal drinking cold water; difficult breathing; swollen legs; loss of appetite; much weakness; purging. When improvement takes place and has advanced a considerable time, give sulphur twice daily for a few days. Of these remedies, speaking generally, the one selected should be given three or four times daily until the symptoms indicating it have abated, then less often. If an animal has been subjected to any of the causes of cold, or if a cold has just appeared, give three or four doses of camphor, twenty or thirty minutes apart, *in the first stages, not after inflammation appears*. This, with proper care, will usually suffice. See Cold in the Horse.

SORE THROAT.

Sore throat is an inflammation of the membranes of the back part of the mouth, involving the other organs of respiration. It is often epidemic in swampy, foggy districts, having causes similar to those of catarrh, though it may result from external injuries or irritating food.

Symptoms.—If the organs involved in swallowing are mainly affected, food is wholly refused or it is not well masticated, and is thrown out of the mouth; fluids in drinking freely flow from the nose; painful and difficult swallowing; saliva first flows from the mouth, then mucus; swollen tongue; the cud is suspended; painful and swollen throat; fever. When the larynx, glottis and upper part of the windpipe are affected, breathing is difficult; frequent dry, hoarse, painful cough, with threatened suffocation; painful, hot and swollen throat; full, rapid, hard pulse; great thirst; fluids returning through the nose during drinking; head stiffly stretched out; hard, dry dung.

TREATMENT.—For full pulse, hot breath, dull, heavy eyes, skin once hot, then cold, give aconite in the first stages, ten drops to the dose. Belladonna is needed for swollen throat; quick, full pulse; hot skin; flow-

ing tears; difficult and painful swallowing; stringy saliva; dry cough. It will often be of especially good service if alternated with aconite. Mercurius is valuable for sore throat with thick nasal discharge. Arsenicum is especially useful for malignant sore throat with offensive breath, prostration, and tendency to gangrene, ten drops every two hours until better.

INFLAMMATION OF THE LUNGS.—PNEUMONIA.

This is an inflamed condition of the lung-tissues. (See Bronchitis and Pleurisy.) It is caused by exposure to cold or to damp, cold weather; drinking cold water when heated; hard or long driving. It may attend bronchitis or pleurisy, and may end in consumption, dropsy of the chest, or other serious disorders. It is sometimes epidemic.

Symptoms.—Shivering; horns, muzzle and ears alternately hot and cold; cold limbs; heaving, panting flanks; hanging head; dullness; muzzle once dry, again moist; costiveness; hard, black, offensive dung; dry, frequent cough; mouth and breath hot; loss of appetite and cud; great thirst; quickened pulse occasionally, perhaps above sixty to the minute; grinding of teeth; groans. Later on, discharges of watery phlegm from the mouth, which grows thick and sticky; loss of milk; sweats; sometimes hard, swollen teats; tears profuse; tenderness of the back and crupper; the animal seldom lies down. Later still, very difficult breathing; great weakness; belly tucked up and legs drawn under it; dung more and more liquid and offensive; ulcers on the body come and go; offensive discharge from the eyes; unconsciousness; pupils of the eyes enlarged and filmy; membranes of the mouth, nose and throat grow cold; imminent death.

TREATMENT.—Aconite given every three hours *at the beginning* will be effective and often sufficient; if marked improvement should not appear, give this in alternation with bryonia as often. Arsenicum is needed for great prostration. Sulphur will complete a cure once begun and restore the system. If the weather be cold, clothe the animal against damp and cold. Give sparingly of such food as bran and boiled oats. Should other diseases follow, adopt the treatment given under them. Also consult the section on Pneumonia or Inflammation of the Lungs in the Horse.

CONSUMPTION.

Consumption is a serious, usually chronic, disorder that is marked by tubercles in the lungs, which grow, run together, and form abscesses. It is caused by neglect or bad treatment of pneumonia or pleurisy, by cold, chill, over-exertion, or a hereditary tendency to the diseases.

Symptoms.—Feeble, hoarse, gurgling, painful cough; impaired digestion; loss of appetite; irregular cud; loss of flesh, also of hair, mainly on the eyebrows.

TREATMENT.—Give nitrum and sulphur alternately at the beginning. In later stages relief will be given by phosphorus and stannum. Put the animal in a comfortable, airy stable, free from north and east winds, apart from other animals. Do not hurry, alarm or excite it. Change the litter often and keep it dry. Rub and curry the skin frequently. The disease may be relieved and the animal's life be prolonged, but it will be unfit for milk, beef or breeding.

BRONCHITIS.

Bronchitis, or inflammation of the air-tubes leading to the lungs, rare in cattle, is caused by neglected or badly-treated cold, by the influences which induce a cold (see Cold), and by disordered digestion.

Symptoms.—Indications of a cold; thick, wheezing breath; exposure to cold causes quickened pulse and breathing, with cough and a rattle in the windpipe; dull eyes; hot mouth; very rapid loss of flesh; great dread of motion; belly tucked up; heaving flanks; the cough is frequent and painful; staring coat.

TREATMENT.—Give aconite *at the beginning* for quickened pulse and breath, hot mouth, short, frequent cough, and fever-symptoms. Bryonia is needed for quick, difficult breathing, rattle in the windpipe, and frequent cough. For rapid loss of flesh and strength, feeble pulse, and restlessness, give arsenicum. Belladonna is especially good for violent, short, dry coughing, red eyes, and wild look. Consult the section on Bronchitis in the Horse.

WORMS IN THE AIR-TUBES.

Cattle a year old or less are affected with a disorder which may be called a form of bronchitis, since it is an irritation and inflammation of the air-tubes, resulting from the presence of silver-colored worms, two or three inches in length. It chiefly invades cattle that are kept on low, marshy or woody pastures, with little or no water.

Symptoms.—Cough, at first dry, short and husky; quickened breathing; distress in the chest; sometimes grunting; nasal discharge; quick pulse; dullness; loss of flesh. Later, there will be restlessness; hanging ears; distended nostrils; hollow eyes; weakness; death. Sometimes apparently moderate health is attended by complete loss of flesh.

TREATMENT.—Let the animal inhale chloroform at intervals to be

regulated by the urgency of the case. If there be doubt as to the existence of worms, use the treatment already recommended for Bronchitis.

PLEURO-PNEUMONIA.—LUNG-MURRAIN.

By these terms is meant a very serious malarial or contagious disease caused by sudden and great changes from heat to cold, or the opposite; crowding animals together in dark, damp, poorly-ventilated stables; contagion; high or artificial feeding. It is very fatal.

Symptoms.—In the *first* stage the attack may be slow, without indications of serious results; it may be rapid and quickly fatal; or it may begin with violent diarrhœa, weakness and loss of flesh. Then there will be an occasional short, dry, husky cough; harsh, dry murmur, or confused humming in the lungs, instead of the natural moist, silky sound (detected by placing the ear to the sides of the chest); milk diminished and yellowish; impaired appetite; quick and labored breathing on motion; pulse sometimes a little quickened and weaker; dullness; heat or coldness of the body; either constipation, purging, or irregular bowels. In the *second* stage the cough is more frequent and painful; thick phlegm in the mouth; grating teeth; grunting; loss of appetite, cud and milk; pain on pressure between the ribs; pulse quick and feeble; skin hard and tight; dung hard and dry. In the *third* stage, the breathing is much quickened and labored, the breath being offensive; pulse quicker, feebler and irregular; horns, legs, and ears cold; cold sweats; the legs stand in various unusual positions; great loss of flesh and strength; weak cough; urine high-colored; violent purging of watery, offensive, blackish, often bloody, dung; death.

TREATMENT.—Give aconite at first, ten drops every hour or two, according to the urgency, for quick, hard pulse, short, painful breathing, dry, hot mouth, scanty milk, cold base of the horns, hard dung, and other fever-symptoms. Bryonia is often needed after aconite, especially if the latter has afforded only partial relief, in which case it should be alternated with it, each once in two hours. The symptoms for bryonia are frequent, painful cough, and avoidance of motion. Phosphorus is valuable for enfeebled or obscure murmur of the lungs; obstructed breathing; slimy or bloody phlegm in the mouth. Prepare it fresh every day. Ammonium causticum is indicated by quick, difficult breathing; rough, staring coat; languor; weak pulse; frequent cough; shivering or trembling; skin hot and dry, but growing moist; great weakness and listlessness. Arsenicum is invaluable for extreme weakness; grinding of the teeth; loss of appetite; short, wheezing and difficult breathing; clammy sweats; small, quick pulse; offensive nasal discharge; much purging, and for epidemic cases. Sulphur is valuable for

aiding a recovery when once begun, and to prevent a relapse, especially when bronchitis is present, with a pus-like mucus coming from the nose. Begin treatment as soon as the first symptoms appear. Separate the animal from others at once. Give mash, oatmeal-gruel, linseed-tea, a small quantity of good hay being added after a few days, but feed sparingly, gradually increasing as recovery progresses, remembering that a return of the disease usually results from too soon overloading the stomach, and is generally fatal. Forcing down food, even in drenches, will almost invariably cause death.

This is one of the most fearful and destructive diseases of cattle, and too much pains can not be taken to prevent its invasion, and to completely isolate all infected animals, so that it may not spread. Its restriction or suppression is engaging the attention of many able men, and has commanded the attention of our state legislatures and national Congress.

PLEURISY.

Pleurisy is an inflammation of the membrane which envelops the lungs. It is caused by exposure to draughts of wind or frost; a wet bed; blows on the side; over-exertion; neglected catarrh; calving followed by exposure.

Symptoms.—The taking in of the breath is fitful or interrupted, its expulsion being full and long; heaving flanks; full, quick pulse; slight cough; dullness; lowered head; animal indisposed to move; mouth, ears and nose hot; muzzle dry; feet and horns alternately cold and hot; much thirst; loss of appetite and cud; urine red; dung dry, blackish and slimy; constipation; milk much decreased; shivering; twitching and wave-like motions of the skin; very tender sides, chest and spine. In later stages, there will be profuse tears; nasal discharge clear and watery, becoming red and bloody; pulse feebler and quicker; breathing more troubled; sweats; nostrils wide open; finally death. In this disorder the breathing is effected by a peculiar movement of the abdomen, while in *pneumonia* it is still done by the ribs; there is more pain on pressing between the ribs than in pneumonia. Pleurisy is liable to end in dropsy of the chest.

TREATMENT.—Give aconite for quick, full, hard pulse, dry, hot mouth, and quickened breathing. If in addition to the symptoms just named there be a bloody nasal discharge, short, catching breath, with rattling in the windpipe, gruntings, pain on pressing the side, and constipation, give bryonia in alternation with aconite every two or three hours. Arsenicum is required in advanced stages for rapid prostration and feeble pulse. When improvement has begun sulphur will complete the cure. For other information consult the section on Pleurisy in the Horse.

CHAPTER IV.

THE SKIN.

ERUPTIONS.

GENERAL eruptions in the form of spots, pustules, scabs, or scales may appear on different parts of the body, resulting from insufficient, excessive, or poor food; from constitutional disease; from unhealthy conditions generally. The sudden suppression of eruptions is often the cause of serious or fatal derangements of internal organs.

TREATMENT.—If disease be the cause, remove it. For independent cases, give two grains of sulphur in the morning and as much arsenicum at night. Other valuable remedies are graphites, silicea, rhus and mercurius.

CHAPS AND CRACKS.

Chaps and cracks in the skin are due to walking on marshes, to the applications of strong medicines, and to internal disease. In the last case, the disease should itself be treated.

TREATMENT.—In independent cases, that is, without internal disease, give arsenicum internally. Sepia will be valuable if the skin is hard, dry and peeling off. Phosphoric acid is needed when the hardened edges of the cracks form wrinkles and ridges. If the pasture is marshy, change it.

WARTS.

Warts are tumors of varying size on different parts of the body, which need no description.

TREATMENT.—Moist, encrusted, chapped warts, of large size and disgusting appearance, should be painted twice daily with strong tincture of thuja, a dilution of the same being given internally night and morning. Ulcerated warts are best treated with arsenicum. Small warts on the lips call for calcarea carbonica; and those which are painful and bleeding, for causticum. After a few doses of either of the above remedies, give sulphur, and if it fail resume the former medicine. See Warts in the Horse.

TUBERCLES.

Tubercles are small, inactive swellings, caused by rubbing, colds, stings, bruises, internal disorder, and the like.

TREATMENT.—If external violence be the cause, give arnica internally and apply externally. For hard, small swellings, give *calcareo carbonica*, followed by sulphur. If an internal disorder be the cause, treat that.

CYSTS.

These are inactive tumors of varying size on different parts of the body which contain morbid matters of varying color, quality and consistence.

TREATMENT.—Continue *calcareo carbonica* once or twice daily; if it fails, give graphites. For tumor under the jaw and above the throat, give *mercurius*. If pus forms in the cyst, *hepar* and *silicea* will be efficacious. Sulphur is useful for almost all forms, and may be given occasionally. It will also complete a cure once begun. *Mercurius-corrosivus* lotion may be used in old or chronic cases, one part by weight to sixteen of *hot* water.

FUNGIOUS GROWTHS.

A fungus is an excrescence due to the rubbing of a rope at the base of the horns, or to the yoke, and also may appear on the hoof. Pus sometimes forms, and the part affected may become very red.

TREATMENT.—If the fungus is very tender upon pressure, apply arnica, one part to fifteen of water. If it becomes hard and is not tender, apply a lotion of *mercurius corrosivus*, one part by weight to sixteen of *hot* water. *Thuja* is needed for a fungus at the base of the horns; *sepia* for one on the hoof; and phosphorus for those that are very red. If a fungus collects pus, treat it as directed under Abscess on another page.

SPONGE.

Sponge is a name given to a spongy growth on the knee, usually caused by an injury. It is at first a hot and painful swelling, then a cold, hard, inactive tumor, sometimes itching and discharging pus.

TREATMENT.—If an external injury be the cause, apply arnica-lotion, rubbing it in well three times a day. Should the swelling become hard, rub in a lotion of *mercurius corrosivus*, one part by weight to sixteen of *hot* water, until the part becomes tender and scurfy, repeating the application in about ten days. *Mercurius corrosivus* internally may be of use.

MILK SCAB.—CRUSTA LACTÆA.

Crusta lactæa consist in white pustules on the head, chiefly about the mouth, nose, eyes and ears, discharging a sticky fluid, becoming dry, and leaving bluish-white scabs. Other parts of the body may be somewhat affected. It is very contagious but causes no itching; has thicker scabs than exist in itch; and is not dangerous, though it produces loss of strength and flesh, and diarrhœa.

TREATMENT.—Persevere some time, once or twice a day, with either calcarea carbonica, rhus, arsenicum, thuja, or sulphur, applying a lotion of arsenicum externally; and if the lotion is a failure, rub on thuja occasionally.

ITCH.—MANGE.

This is similar to itch in the human being, and is caused by the presence of numerous minute parasites. The predisposing causes are bad food, wet weather, filth, close, damp, unclean stables, bad winter care, indeed, whatever puts the animal in poor condition. It is more commonly taken by contagion from an infected animal, and may thus be communicated to the human system.

Symptoms.—In *dry* itch, restlessness; scratching; naked or scaled and bleeding spots; perhaps ulcers and scabs later, giving out a fluid which soon thickens and forms crusts. In *moist* itch, larger, deeper ulcers, with a thin, reddish, irritating fluid and thicker scabs than in dry itch. Marasmus or dropsy may ensue (which see). Itch is liable to be attended with lice (see Lice). The only absolute proof of itch is the presence of the insect, which may be detected if one will scrape off some of the scurf and examine it carefully—with a magnifying glass if his sight is not sharp.

TREATMENT.—Make an ointment of one ounce of sulphur and two ounces of lard, thoroughly mixed. Rub this on with a clean, large paint-brush, being sure to reach every part and wrinkle where the parasites may be. If a few remain they defeat a cure. Use this morning and night for a day or two. Give internally two grains of sulphur in the morning, and as much arsenicum at night. Wash the scaly parts thoroughly with soap and tepid water, and then carefully dry with a cloth. Ointments containing mercury and arsenic are to be avoided. Pastures in which infected animals have run should be vacated eight to ten weeks before they are used again, the cloths, brushes and other articles used in the treatment being burned or thoroughly boiled, and the stable, gates and posts against which they have rubbed being studiously washed with strong carbolic acid to prevent a spread of the disorder in the herd.

GOITRE.

Goitre is a tumor with enlarged gland on the neck, usually the left side, and is sometimes chronic. The animal carries the head outward and upward, at times bellows in distress, and has a painful cough.

TREATMENT.—Spongia, continued some time, is useful; iodine is also. Mercurius and drosera may be required. An occasional lotion of mercurius-corrosivus may be used. As the disorder is due to the properties of the drinking-water and the soil—chiefly lime and phosphates—a change of water and pasture will afford the surest grounds of hope of a cure. At best, protracted treatment will be necessary.

WORMS IN THE BACK.

Worms in the back are caused by the gad-fly piercing the skin and laying eggs, which hatch, leaving maggots that remain until the next summer, before escaping as gad-flies, unless removed by treatment. These maggots live on the pus resulting from a tumor which becomes as large as a small filbert. They cause pain, irritation, pus-formations, loss of strength, and damage to the hide by perforating it. They attack only healthy cattle.

TREATMENT.—Through the small opening which will be found in the tumor, thrust a small instrument or red-hot needle and thus destroy the maggots, carefully searching the whole back for them. The same advantage may be gained by squeezing the tumor and thus crushing or forcing out the worm; or by frequently washing the tumors with camphorated brandy. Give sulphur internally after the above treatment.

LICE.

Lice afflict calves and young cattle especially, and are found chiefly behind the horns and ears, on the membrane passing down from the throat, on the withers, and back of the neck.

TREATMENT.—Dress well with olive oil, or with equal parts of water (or glycerine) and sulphurous acid. A lotion of carbolic acid is also good. If eruptions caused by the lice do not disappear when the insects are removed, give a few doses of arsenicum. Observe perfect cleanliness and destroy the bedding of an infected animal. It will be well to rub all objects which the infected animal has touched with carbolic acid. Keep the animal in good health and flesh, to ward off lice. Fowls roosting about the stable very often impart lice to cattle, and their removal is often necessary.

STINGS AND BITES OF INSECTS.

Stings or bites may cause inflammation and pain. Remove the stings if they remain in the skin, and foment with diluted arnica or ledum. If many insects, as a swarm of bees, have settled on the animal, give arnica internally and apply externally. Apis is an excellent general remedy.

HIDE-BOUND.

Hide-bound is a condition resulting from disordered digestion, deficient or poor food, rough weather, intestinal worms, or chronic disorders of the lungs. The skin is hard and adheres to the ribs, the hair being rough.

TREATMENT.—Treat the disease which causes the condition. As a rule, arsenicum is best for loss of flesh and strength, poor appetite, and cold skin, three doses being given daily for a few days, then twice a day.

SURFEIT, ERYSIPELAS, ETC.

For all requisite information upon Surfeit, Erysipelas, Ringworm and other disease of the skin not treated in this chapter, refer to the corresponding ailments of the Horse.



CHAPTER V.

THE URINARY AND GENERATIVE ORGANS.

INFLAMMATION OF THE KIDNEYS.

INFLAMMATION of the kidneys is often combined with inflammation of the intestines or bladder. It is caused by changes of temperature, eating unsuitable food or plants, strong medicines, as cantharides in too large doses, and external injuries to the loins. A careful study of its symptoms is requisite to distinguish it from other urinary disorders.

Symptoms.—Scanty urine, passed with pain and difficulty (by which this disorder is distinguished from Inflammation of the Bladder, in which the urine is passed readily and copiously); urine thin at first, then thick and red; parts near the kidneys very hot and tender on pressure; back arched; legs brought together under the body; hot rectum; dung scanty, its passage giving pain; appetite and cud lost; considerable thirst; quick, weak pulse.

TREATMENT.—When there are much fever and pain, give aconite at once in doses of five to ten drops every one or two hours. When such a condition is accompanied with frequent painful urgings to urinate, followed by a discharge of small quantities of bloody urine, cantharis should be given in alternation with aconite. After the inflammatory symptoms have subsided and frequent but almost ineffectual efforts to pass urine continue, with obstinate constipation, *nux vomica* will be quite sufficient. Give small quantities of light, nutritious food, and clothe the animal comfortably in cold weather. For further directions, see this disorder in the Horse.

INFLAMMATION OF THE BLADDER.

Inflammation of the bladder is so similar to that of the kidneys, that the reader should here note the symptoms mentioned in the preceding article, together with this distinction, that in this disorder of the bladder the animal leans first on one side and then on the other, with the back almost constantly arched.

TREATMENT.—Adopt the treatment laid down for Inflammation of the Kidneys, adding hyoscyamus to the remedies there named.

SPASM OF THE BLADDER.

A spasm of the neck of the bladder is caused by stoppage of sweat; too watery food; cold feet; too long retention of urine. It is indicated by great restlessness; unsuccessful efforts to urinate; much suffering; scraping with the feet; violent falls. The retention of urine distinguishes the disorder from colic.

TREATMENT.—For fever, and scanty, bloody urine, give aconite from one to four times an hour, according to the urgency of the case. Similar doses of cantharis will afford much relief. See this disorder in the Horse.

BLOODY URINE.

Bloody urine more often attacks males than females, and is caused by improper or poisonous food, catarrh, injuries from jumping, blows, and the like (especially in cows at the time of calving).

Symptoms.—Loss of appetite; much thirst; cold feet, ears and horns; rapid pulse; pain on pressure about the loins; chills; mouth and tongue hot; pulse feeble; passage of dung painful; the urine gradually becomes red, its passage in later stages being very distressing and made up of drops only; if the bladder and kidneys become much inflamed, the case is hopeless.

TREATMENT.—Give cantharis two or three times daily; if it fails, give camphor twice a day, ten grains or more with pounded loaf sugar, placed dry on the tongue or put in a little water and well shaken. Consult the article on the same disease in the Horse.

BLACK WATER.

Black water, also called “red water,” is caused by neglect, harmful vegetation in swampy lands, buds, decayed leaves, insufficient grass and water in summer, sudden changes in temperature, diseases of the stomach and liver, injuries, and exposure to wet and cold soon after calving.

Symptoms.—At first, dullness, poor appetite, tender loins, unthrifty-looking skin; then red urine, or even black, entire loss of appetite, all parts of the skin and whites of the eyes yellowish-brown; quick, full pulse; the bowels, perhaps very loose at first, become greatly constipated; sunken eyes; rapid loss of strength and flesh; violent purging; death, unless treated properly.

TREATMENT.—Fever and diminished milk demand aconite every three hours until the fever abates. Give cantharis for scanty, red urine passed with pain and straining. For sudden attacks, with shivering, cold extremities, and great difficulty in urinating, give eight drops of camphor every half-hour for three or four times. Ipecac is needed if the whites of the eyes are tinged with yellow, and if the breathing is difficult. If injuries be the cause, give arnica every half-hour. Pulsatilla is specially valuable for the general symptoms. Give such food as mash, gruels, fresh meadow-grass, and linseed-tea, in small quantities. Avoid turnips. Keep the animal from winds, allowing exercise in a suitable shed or yard, but avoiding the hot sun for several days after an apparent recovery.

RETENTION OF THE URINE.

Retention of urine, different from its suppression in Inflammation of the Kidneys, has symptoms similar to those of Inflammation of the Bladder (which see); the urine is wholly stopped, or passes only in small quantities and with much difficulty.

TREATMENT.—If the symptoms be severe, give ten drops of nux vomica every half-hour or oftener. Cantharis and bryonia are very valuable for the general symptoms. For other remedies see this disorder in the Horse.

DIABETES.

Diabetes is a large discharge of sugary urine, at first clear, then greenish. It is caused by cold, or by juicy, frozen or frosted food.

Symptoms.—Excessive urine and thirst; growing weakness; difficult passage of urine; continued fever.

TREATMENT.—Phosphoric acid is the best remedy, but nux vomica and sulphur are useful for the general symptoms. Give water sparingly, a little flour-gruel mixed with water being also advisable. Avoid much juicy food. See "tests" and full treatment of Diabetes in the Horse.

STONE IN THE BLADDER.

Symptoms.—Very scanty urine; stamping; looking at the flanks; switching of the tail; later, bursting of the bladder; appearance of dropsy sets in, followed by returning appetite, though death is near.

TREATMENT.—Treat the same as Stone or Gravel in the Horse. The stones, when once formed, can be successfully removed only by one of professional skill, and are often incurable.

CALVING AND FLOODING.

Though calving is purely physiological, it may lead to more or less serious consequences if the cow is not properly treated. She should be dry for about a month before calving, which will be in about nine months after impregnation. This will allow an adequate nourishment for the calf and lessen any tendency to milk-fever or inflammation of the udder. If she is poor, she should be dry for more than a month. During such a period food should be given oftener, but in less quantities. For a few days before calving one will notice quick breath, groans, uneasiness, rapid enlargement of the udder and dropping of the belly, and a discharge of mucus from the vagina. Restlessness increases, the cow often lying down, when pains will come on, with the expulsion of the calf. The after-birth generally comes away at once, but may remain several hours and threaten serious results. As a preparation for delivery, feed sparingly of mashes and hay for a few days, and frequently strip the udder if it is swollen and hard. Afford a roomy, well-ventilated place, without superfluous litter, but with comfortable bedding. If any serious consequences are feared, put adequate covering on the animal immediately after delivery. If fever ensues after calving, give aconite. Pulsatilla should be administered two or three times a day if the after-birth does not come away soon after delivery. If it remains in spite of the pulsatilla, call a veterinary surgeon to remove it.

"Flooding" is a term applied to an unusually full discharge of blood after delivery. It is caused by a lack of proper contraction of the womb, or by injuries sustained in assisting a difficult parturition. If at this time there be a violent straining and great flow of blood, give secale every three or four hours, and pulsatilla may be alternated with it. If an injury has been the cause, give arnica three or four times daily. Keep the cow quiet, with the hind quarters elevated a little. Inject cold water into the rectum, and for a short time apply at intervals to the loins some cloths soaked in cold water. This will contract the blood-vessels.

INFLAMMATION OF THE WOMB.

Inflammation of the womb is caused by difficult labor in calving, and by cold.

Symptoms.—Discharge of mucus and blood; fruitless efforts to pass urine; swollen bearings; loss of appetite; cold feet and ears.

Treatment.—At first bryonia alternated with aconite every two to four hours will be beneficial. After the fever, if swelling of the bearings and straining remain, give sabina. For difficult urination and pain in

the belly, give belladonna, alone or alternated with bryonia. Insure quietness and a mild diet and protect the animal against colds.

FALL OF THE WOMB.

This is caused by very difficult calving, or the work of an assistant during the same. The womb protrudes from the vagina more or less, being of a deep-red appearance.

TREATMENT.—Treatment should be given at once. Place the hind feet a little higher than the fore ones. If the womb has become dry, cold or dirty, gently and thoroughly wash it with tepid milk. Wrap the hand with a soft cloth soaked in tepid milk and carefully turn the womb back to its place, as in turning a glove-finger that has been turned inside out. This operation is more safely done by a surgeon, and he may find it necessary to use some appliance to prevent further protrusion. If the trouble is caused by the cow's efforts to expel the afterbirth, give pulsatilla and sepia. For much straining, secale should be given every three or four hours.

MISCARRIAGE.—ABORTION.

This occurs between the fifth and eighth months of pregnancy, chiefly in over-fed cows. In a given district abortion in one cow may be followed by the same in others, and one occurrence is likely to lead to another in the same cow in about a year. Its chief causes are bad or frozen food, impure water and air, confinement in dark, unhealthy stables, violent exertion, injuries to the belly, and sexual intercourse during pregnancy; the smell from a cow that has recently suffered a miscarriage is liable to induce it in others that are pregnant.

Symptoms.—Threatening symptoms are aversion to food, restlessness and anxiety, low spirits, lowing, sudden stoppage of milk, offensive mucous discharge from the vagina, collapse of the belly and stoppage of the motions of the calf in the womb.

TREATMENT.—Arnica, repeated according to the urgency of the case, will often avert a miscarriage if used immediately when an injury has been sustained during pregnancy. After the symptoms have begun, secale is an admirable remedy, as it aids the labor. For chills, give arnica every hour until they disappear. If strains or over-exertion threaten miscarriage, give rhus instead of arnica. Guard against recurrences. After a miscarriage has begun it is useless to try to check it. To prevent it, avoid the causes mentioned above, and the cautions given upon Abortion in mares on a preceding page.

INFLAMMATION OF THE UDDER.

Inflammation of the udder after calving is caused by exposure to bad weather, injuries from lying on the udder, or failure to empty the udder. It occurs chiefly after the first calving.

Symptoms.—Hot, painful, swollen udder, with hard, internal lumps; fever; full, rapid pulse; mouth and horns hot; quickened breath; constipation. The symptoms afterward become worse, there being loss of cud and appetite; abscesses in the lumps, perhaps bursting and discharging blood and pus; deep, malignant ulcers; poor and diminished milk; perhaps hardening of the udder.

TREATMENT.—Give aconite for fever, a few doses at the beginning. At the first, bryonia and belladonna in alternation will often effect an improvement. Hepar should be given if the swellings are suppurating. Phosphorus and silicea are also valuable, in alternation, for the same symptom. For chronic enlargement of the udder, rub once or twice daily with one drachm of iodine in two ounces of lard. Strip the udder often and then bathe it with warm water and soap.

SORE TEATS.

The teats become sore from various causes, especially in young cows after calving. External injuries, warts and constitutional disorder induce the trouble.

Symptoms.—After calving, tender and inflamed, scaled or cracked teats, a bloody discharge mixing with the milk as well as coming from the sores; pain in milking; kicking which may grow to a settled habit; diminished milk; sore udder; perhaps inflammation of the udder (see last disease above).

TREATMENT.—If warts be the cause, pluck or cut them away, and dress the wound and sores once or twice daily with a lotion of four grains of arsenicum to four ounces of pure boiled or distilled water. If soreness results from cracks, apply two or three times daily a preparation composed of twenty drops of arnica and one ounce of lard. If injuries be the cause, use an arnica-lotion twice a day. Calendula-lotion applied to the sores several times daily is a good treatment for sore teats in general. If ulcers are forming, aid the process by giving hepar. When the ulcers break, give silicea every four hours to complete the cure. Before making an application, and before milking, cleanse the teats well, and foment them with warm water to soften them. A tube gently inserted up the teat at milking-time will draw off the milk, avert kicking, and aid the healing.

COW-POX.

Cow-pox is a pustular eruption on the udder, and is caused by contagion, and perhaps by bad food and atmospheric influences.

Symptoms.—Fever; diminished or suppressed milk; appetite less, and chewing of the cud stopped; large, round eruptions on the teats, depressed or concave at the center, containing at first a thin, serous fluid, which grows thick and yellowish, and oozes out; the ulcers being broken, they leave deep-seated, malignant ulcers; if they be not broken, a scab forms, which leaves sound skin underneath, when it falls off. (It is an interesting fact that the virus of cow-pox, taken from the teats, is that with which the human family is inoculated in vaccination as a preventive of small-pox.)

Another form, known as "spurious cow-pox," is indicated by eruptions of varying size and shape, the top swollen and containing a thick, yellowish matter (not concave as noticed above), forming a crust which, if not disturbed, will fall off and leave sound skin, but will leave many small, ulcerative sores, which are hard to heal if removed in milking or by other mechanical agencies.

TREATMENT.—One or two doses of sulphur daily will usually suffice. If ulceration occurs, give mercurius or hepar. If the sores run together and irritate the surface, give arsenicum twice daily. Apply a calendulation to the sores.

GONORRHEA.

This is a disease of the mucous membranes of the canals through which the urine passes. It occurs in either sex and is caused by excessive sexual intercourse, or diseased organs during the intercourse, and by lack of cleanliness.

Symptoms.—In the bull the sheath is red and swollen. In the cow, the tail is shaken and moved aside; the bearings swollen, sore and internally red. In either sex, there is a constant discharge of matter from the organ, with frequent, small and painful discharges of urine.

TREATMENT.—Usually aconite will be sufficient if given at the beginning, when there is much inflammation, with difficulty and pain in urinating. Give four or five doses three hours apart. If, after the signs of inflammation have abated, the difficult urination continues, especially if the urine be greenish and tinged with blood, give cantharis every three hours, or every six hours with aconite midway between the doses. After a few doses of the above remedies, especially if much soreness exists, with thick, white, greenish or yellowish discharges, give two grains of mercurius three

times a day. Iodine is useful, ten drops three times daily. A dilution of thirty drops of iodine to one pint of water may be good (for the cow) as an injection into the vagina two or three times a day. When recovery begins, it may be completed and the system restored by giving sulphur once or twice a day for a week. Wash the parts often with cold water, and inject the same into the rectum and vagina. Allow no exercise of the sexual instinct until a full and complete cure is effected.

CASTRATION.

Castration of calves should take place from the sixth week to the fifth month, according to the animal's strength, the weather, and the season. The operation in calves is seldom attended with serious results, though proper precautions should be taken to prevent undue irritation or inflammation. Medical treatment is generally unnecessary. For requisite information on the methods of performing the operation the reader should consult a competent operator. Suitable directions upon the care of the animal after castration, and upon the required treatment of resulting derangements, are given in the article on Castration in the Horse.



CHAPTER VI.

MISCELLANEOUS DISORDERS AND INJURIES.

SIMPLE FEVER.

CATTLE are particularly subject to a simple type of fever, especially when kept on low, marshy lands. It sometimes develops into a typhoid or intermittent form. Its causes are exposure to damp and cold, miasma, exhalations from foul water that contains vegetable refuse and other influences of the kind.

Symptoms.—Dullness; languor; thirst; heat of the body and base of the horns; quick and hard pulse; refusal of food; heaving of the flanks; more than normal pliability of the skin; the nose alternately moist and hot.

Treatment.—Aconite is needed until the fever abates, a dose every four to six hours. If the appetite be poor after the fever subsides, give nux vomica two or three times a day. Keep the animal in a clean, roomy, well-ventilated place, free from excessive litter. Feed lightly on mild food, such as bran and oatmeal. Give a fair amount of cold water.

INFLAMMATORY FEVER.

Inflammatory fever often affects cattle in an epidemic form, especially those that are young, and is at times attended with great mortality.

Symptoms.—At first the symptoms of simple fever come on. Then the case is generally marked by lameness in one leg, usually a hind one, which is swollen; reluctance to move; eyes inflamed and protruding; tongue dry; nostrils expanded; muzzle dry; neck extended; breathing quick and labored, with occasional deep breaths; loss of appetite and cud. Later, the animal is seemingly unconscious, moans, gasps, stands still or staggers; loins tender and painful; swelling on the loins, back, and shoulders, which produce a crackling noise if pressed; weakness increases; the animal falls; ulcers on different parts of the body; offensive discharges from the mouth and nose; dung very offensive, sometimes bloody; urine high-colored, bloody and offensive; death within twenty-four hours.

TREATMENT.—Give aconite every hour, or oftener in very severe cases. If no improvement is seen, give this in alternation with belladonna. When the animal is growing better, increase the time between the doses. Though this disease usually ends fatally, these remedies should be given while the animal is kept in a comfortable place with plenty of clean, dry straw. If it improves, simple food may be given. To prevent the disease, do not allow cattle to go too freely upon rich pasture after being poorly fed. Impure water must be avoided during the disease, and even pure water allowed only in small quantities.

TYPHUS FEVER.

This frequently follows inflammatory fever, especially in adult animals, and occurs more often on low, marshy, malarial lands. It is sometimes epidemic and marked by great fatality. Predisposing causes are want of water, excessive work, foul stables, injurious plants, bad food, great heat after rains, and stings of insects.

Symptoms.—Loss of appetite and cud; stupor and staggers; eyes fixed but not red; horns, nose and ears rapidly alternate between heat and cold; the head hangs, or is carried up, and from side to side; moans; discharges of blood from the nose, and sticky saliva from the mouth; the urine is strong and high-colored, and the dung is in hard small lumps, or both may be stopped; coat rough, dull and staring; skin sometimes bound to the under tissues, sometimes separated by air, the hand passed along the back producing a peculiar rattle; cows give little or no milk from the commencement; ulcerating tumors often appear on the back, belly, limbs, sheath and udder; death often ensues very suddenly, though the disease may continue three or four days. During improvement, or after an apparent cure, a relapse may set in. Tumors may remain after danger is passed, as well as stoppage of milk, hardness and scantiness of dung, loss of appetite and cud, swelling of the teats, and air under the skin, but these may be corrected.

TREATMENT.—For full, hard pulse, hot, dry skin, and great thirst, give aconite every hour or two for three or four doses. If to these symptoms are added congestion of the head, wild expression, and sensitiveness to the light, give aconite and belladonna in alternation every two or three hours. If there be great loss of strength, trembling, much thirst, glassy eyes, hurried pulse, cold and swollen legs, scanty, or bloody urine, involuntary passages of offensive dung, arsenicum is very valuable; give it every hour until improvement is noticed. This alone has effected cures. If great drowsiness remains after recovery, opium is needed. If the animal

be furiously delirious, for treatment see Nervous Fever. Feed sparingly on light, wholesome food, keep the animal away from others, and before healthy cattle are admitted remove all refuse and disinfect the place with carbolic acid.

NERVOUS FEVER.

Nervous fever is sometimes epidemic and may become very destructive by contagion.

Symptoms.—Dry tongue, mouth and nose; loss of appetite and thirst; weakness; convulsions, sometimes violent; the animal totters and falls; dung at first dry, but becomes soft; then food passes undigested; foul tongue; much disagreeable saliva in the mouth; fever increases at night; delirium.

TREATMENT.—In abrupt cases, with decided fever, begin with aconite, at intervals of two to four hours. When the fever subsides somewhat and great excitability ensues, give belladonna. For furious delirium and involuntary passages of dung, alternate belladonna with hyoscyamus, or, if the animal be unconscious, with stramonium. When no specific remedy is indicated by the symptoms, or after the violent symptoms have subsided, leaving reduced muscular power, bryonia is advisable. Muriatic acid is required for great debility and dry mouth. For constipation with cold extremities, diarrhœa, or weakness after the disease is subdued veratrum is useful. Give the animal light, nutritious food, but sparingly, and provide a well-ventilated place, free from excitement.

ANTHRAX.—SPLENIC FEVER.

The term anthrax applies to a very infectious disease, known by different names, according to the type or stage. It generally occurs in hot weather, arising in rich, damp places, especially those in which there are much decaying vegetable matter and excessive moisture, as on dried-up lakes, ponds or water-courses, or on newly-turned ground where rich pastures have been. It is caused by any form of contagion which favors the transmission of the poison from a diseased to a healthy animal, as by food and drink, though it is seldom or never communicated by the air. Animals in poor condition put on rich food, or well-fed ones which have insufficient exercise, are more liable to its attacks. The virus is most potent in an animal that is yet alive or has just died or been killed, though it will remain active for many weeks in any weather and atmospheric conditions. It is susceptible of transmission to man as well as to any of the domestic animals, being more often taken by contact of the virus with a break or abrasion of

the skin. If the flesh of an infected animal be eaten by man or beast, the disease is readily transmitted. We thus see the urgency of care in handling animals that are afflicted with it.

Symptoms.—Perhaps the most notable characteristic of the disease is its rapid progress. It may be of an apoplectic form, the animal suddenly falling and being soon seized with convulsions, the pulse and breath being quickened, the skin turning blue, and death ensuing in an hour or less, in some cases before it is learned that the animal is sick. The disease may be characterized by external swellings, or not. If so marked, it is sometimes known as blain, gloss-anthrax, black-tongue, black-quarter, bloody murrain and the like (which are elsewhere spoken of in separate articles); but these types are not now under consideration, the present discussion having reference to the form known as splenic fever, so named from the enlargement of the spleen, though the carbuncles which *occasionally* form show its relation to the kinds just alluded to. Distinguishing symptoms of this are an alternation of high and low temperature, this going up to 105° or 110°; purple mucous membrane; loss of milk in cows; increased thirst; very rapid pulse; then perhaps an interval of apparent health, followed by spasm of the muscles of the back and loins, with loss of power of motion in the limbs and trunk; violent convulsions, peculiarly affecting the eyes; diminished temperature; seeming unconsciousness; mucous and bloody discharges from the nose, mouth and rectum; possibly formation of carbuncles during the disease on different parts of the body.

TREATMENT.—In the most severe cases medicine will be of little avail. Give ten drops of aconite every ten or fifteen minutes if the feverish symptoms are marked. For sudden falling and other apoplectic signs, alternate belladonna with aconite, every fifteen, twenty or thirty minutes, according to the severity of the symptoms. Nux vomica and opium are also good when such symptoms are present. Sixty drops of nitro-muriatic acid, two drachms of chlorate of potassa, and three grains of bichromate of potassa, a dose twice a day, is very highly recommended by a leading author. Some of these remedies will often be found helpful, though the rapid progress of the scourge does not often admit of successful treatment of the first that are attacked in a herd. If carbuncles form, sulphur, arsenicum and mercurius will be found valuable internal remedies, and a wash of dilute carbolic acid should be applied two or three times a day if the carbuncles gather and break.

When an animal is supposed to be infected, give solid, nutritious food, provide a comfortable stable that will furnish an abundance of pure air, and give ten drops of arsenicum night and morning. Before healthy cattle come near the quarters in which the sick have been kept, deeply bury the

dead, and thoroughly disinfect the stable or other quarters with carbolic acid. The attendant must exercise care about letting any of the discharges come in contact with breaks in his skin, or with the mucous membranes.

MILK-FEVER.

Milk-fever is a frequent and fatal disease which may occur within a day after calving, though there is danger of it until the fourth day has passed. It is caused by difficult labor in calving; high stall-feeding; excessive or too rich food after calving, insufficient exercise, cold and wet, summer heat, over-driving, and bad treatment. One attack predisposes to another. It is more likely to attack fat cows that give much milk.

Symptoms.—Listlessness; trembling; great thirst; loss of cud and impaired or lost appetite; breathing and pulse quickened; heaving flanks; nose dry and hot, and the horns hot; urine scanty; dung hard and lumpy. Later the eyes are bright, staring, of a leaden color or streaked with red; eyeballs prominent; breathing difficult, and pulse not so rapid; the cow shifts the weight from one hind leg to the other; inclination to lie down checked by swollen belly; udder hard and swollen, furnishing no milk, the animal totters, falls, rises again and falls, finally with inability to rise; in some cases she lies quiet, resting the head on the ground, or turning it toward her side as if in great pain; eyes dim, wild and fixed; lost sight; in other cases she is restless, foams at the mouth, and the paunch is much swollen; death in a few hours, or possibly two days.

TREATMENT.—At first, if fever is prominent, with quick pulse and breathing, and scanty urine and loss of milk be noticed, give five drops of aconite every half-hour for four or five doses. After those doses, if there be a furious and anxious expression, protruding eyeballs, general restlessness, hot horns, dry, hot nose, and painful swelling of the belly, give aconite and belladonna in alternation every two hours, or oftener if the case be very severe. If the disease advances after several doses of the first remedy, there being greatly swollen paunch and udder, cold extremities, difficult breathing, slow pulse, and intense pain, give twenty drops of ammonium causticum in a wineglassful of water every fifteen or twenty minutes until the swelling subsides. When the swelling has been reduced and the cow is sleepy, insensible to pain, unable to hold the head up from the ground when down, and has glassy eyes and open mouth, with loss of power of seeing and swallowing, give twenty drops of arsenicum, at intervals of from fifteen to sixty minutes according to the severity of the symptoms. Opium may be alternated with the arsenicum if the cow is utterly prostrated, with cold surface, glassy eyes, and weak pulse. Give nux vomica three times

daily when the cow has partially recovered, but is still unable to rise. After apparent recovery a relapse may be averted by giving sulphur several days an hour before the morning feed. To restore the milk give chamomilla.

Before calving, especially in hot weather, give only very easily digestible food, and closely watch the cow to detect any symptoms of the disease after calving. Upon the appearance of the disease put her in a roomy stall apart from other animals, free from excitement, with plenty of fresh air and clean, dry straw. Put her on a level when lying down, the feet being in the natural position of a cow lying down, bolstering her with bundles of straw, her head and neck being on a gentle incline. Remove at once all dung that is evacuated. Frequently remove the milk from the udder. If the urine does not pass, draw it with a catheter two or three times daily. If the cow can not shift herself, she must be turned over several times a day, or she will grow worse and suffocate. Food must not be forced upon her in any form, but if she can swallow, a small quantity of tepid water may be gently given now and then. Cold water dashed upon the spine and immediately wiped off is of great benefit, though chills and colds must be avoided.

BLACK QUARTER.—BLOODY MURRAIN.

Black quarter affects young cattle chiefly, and is quite common.

Symptoms.—When fully developed, there will be high fever; quick, full pulse; outstretched head; hot mouth; quickened breathing; loss of appetite; blood-shot eyes; moaning; lameness, usually in one leg; painful swelling about the quarters or joints; tender back and loins; swellings on the back, shoulders and loins; crackling on pressure of the swellings; patches of skin hard, dry, and then sloughing, leaving unhealthy sores with an offensive discharge; mouth and tongue ulcerated; offensive fluid drops from the nose and mouth; diarrhœa; exhaustion; death.

TREATMENT.—Medicine is generally of little avail, but the following remedies may relieve and possibly cure. For the early stages, with quick, heaving breath, expanded nostrils, and dry muzzle, give ammonium causticum; mix one part of the strong liquor in seven of water and give ten drops of the dilution every half-hour. When local swellings appear, alternate rhus and belladonna, ten drops every one or two hours. Rhus and mercurius in alternation are serviceable for severely ulcerated tongue and mouth; free discharge of saliva, or of bloody fluid, given the same as rhus and belladonna. For prostration, purging, pain in the bowels, and bloody fluid from the mouth, give arsenicum. Apply carbolic acid, one part of strong acid to twenty of water, to all swellings, sores and ulcers. The patient should be isolated from the herd.

EUROPEAN RINDERPEST, OR CATTLE PLAGUE.

This disorder, known also as Russian Cattle Plague, is a contagious fever which is communicable to other animals than cattle. It is marked by a general congestion of the mucous membranes and an excessive growth of the outer layers of the cells of the skin and membranes, with a shedding of the latter. It is transmitted only by contagion, but very readily in that way. Its violent symptoms may occur in a day after its germs have been communicated, though it may not become fully established for ten days.

Symptoms.—At first, irregular but rather an increased appetite; dullness; tottering; occasionally the animal bellows, stamps, and is vicious; hanging head and ears; chewing slow and irregular; upon rising the animal yawns, humps the back and draws the feet under the body, but does not stretch itself, as is usual in healthy cattle; trembling; bristling hair; eyes blood-shot; eyelids swollen; husky cough; dry, scanty dung, and scanty urine, both passed with difficulty; the animal is tender; pressure on the loins causes dropping of the back. After the third day and as early as the eighth, twitching; bristling hair; trembling limbs; the ears hang and are cold or hot, as are also the roots of the horns; mouth red and hot inside; gums swollen and spongy, sometimes spotted with red; loins more sensitive; skin very tight; violent, hollow, convulsive cough; pulse at the jaw weak, rising to 90 or 100; dung scanty and hard, sometimes nearly black; urine light-colored; wind-puffs on the back and loins; fever worse in the evening; in cows, the milk is stopped and the udder shriveled; tail extended straight or strikes the side; the animal looks at the side; if vigorous, he is violent; if feeble, he shakes his head and grinds his teeth. About the tenth day there are great weakness and thinness; running eyes, the tears forming a crust; white, sticky discharge from the nose; tongue relaxed; loss of cud; dung watery, and forcibly discharged; hind parts greatly swollen; breath very offensive. Four or five days later one will see a gray, corrosive and offensive discharge from the nose, eyes and mouth; skin of the mouth dried up, that of the body peeling off; cold extremities; quickened breath; dung watery and bloody, passing involuntarily and nearly constantly; general stupor and loss of feeling; death following three days later; or the symptoms in favorable cases decline daily, recovery not being complete, however, for several weeks.

TREATMENT.—Give bryonia for heat, or coldness with shivering; drowsiness; loss of appetite and strength; constipation; short, difficult breathing; loose cough; offensive breath. Mercurius is needed for moist tongue; heat; thirst; red eyes; discharge from nose and eyes; swollen and sore nose; pain in belly; difficult swallowing; discharges from the bowels

watery, slimy and bloody, with straining. Arsenicum will be particularly good for a mucous, irritating discharge from the nose; alternately hot and cold surface; shivering; thirst; depressed spirits and strength; foul breath; swollen eyelids; feeble pulse; profuse diarrhœa, with offensive smell; general prostration of vital functions. This may also be tried as a preventive. When the lungs are much involved, and there is not the prostration which requires arsenicum, give phosphoric acid, alone, or still better, in alternation with belladonna. Rhus is needed for red and swollen skin, especially in the legs; stiffness; itching eruptions, which spread and grow moist; loss of power in the limbs; scurfy and grooved skin.

AMERICAN RINDERPEST, OR TEXAS CATTLE DISEASE.

This is an exceedingly infectious and contagious disease. It may be taken from cattle being with those infected, by contact with their litter and dung, or by walking on the same roads, and its virus may remain in a place for weeks or months. Cattle have died within four or five days after an exposure to the infection, but the time may be longer; indeed, the sickness may not show itself for a number of days.

Symptoms.—A suspicion of the presence of the disease may lead to an examination with the thermometer, and the temperature will be found to be several degrees above the normal if the disorder exists. The first patent symptoms are trembling, disinclination to move, unsteady gait, skin alternately hot and cold, drooping head, appetite and thirst apparently normal, and the milk diminished in cows. About the fifth day there will be noticed shrunken sides; quickened breath; inability to rise or stand; continued efforts to urinate, resulting in small, bloody discharges; the dung passes hard and dry, with straining; the milk in cows grows less, not stopping wholly, and is of a thick, creamy consistence. Still later there will be drooping ears; base of the horns hot; eyes dull and staring; trembling in the flanks; listlessness; feet braced under the body and the back arched; head and ears more drooping than before; dung hard, covered with mucus and blood, and passed with effort; perhaps diarrhœa, and frequent discharges of dark, bloody urine; increased breathing, pulse and temperature; weakness; the animal falls, is unable to rise, and death ensues. Calves are seldom attacked, if ever. Milch cows are specially liable to the disease, and abortion is much more apt to occur during the disorder.

TREATMENT.—It is not advisable to resort to treatment, the destruction of the animal being best. Iodide of potassa and chlorate of potassa may be used with advantage, if any treatment is undertaken. Carbolic acid surely has some efficacy. The pure article or very strong solution

may be put in a large open vessel and be held under the nose so the animal will inhale it. *Small doses* of the same acid diluted may be given internally, especially in severe cases, and will be very beneficial. At the same time the heavy oil of tar should be sprinkled freely about the yard, as it contains a large percentage of carbolic acid. Give a low diet of soft mashes throughout, and return slowly to the regular food when recovery begins. Insure plenty of outdoor air, salt and water. For other remedies and the general care for diseased animals, one may select from those given under European Rinderpest, according to the symptoms, though it is believed that carbolic acid is the best of all. As a *preventive*, the heavy oil of tar or carbolic acid, copiously sprinkled around the yard or stable, will usually prove very beneficial, and such precaution should be taken whenever it is thought that cattle have been exposed to the disease.

This dreadful malady originates chiefly in the district near the Gulf of Mexico and is communicated to Northern cattle by herds which are brought from those sections. It has been known in the North as a very virulent and fatal disease from the time that cattle were first brought from those gulf-districts. Confusion has often arisen because of the various names by which it has been known at different times, as bloody murrain, yellow murrain, dry murrain, distemper, black-water, red-water, American cattle plague or rinderpest, gastric, splenic, period, acclimating, Spanish and Texas fever. Indeed, many cases of loss by death have been attributed to murrain and other disorders when Texas fever has been the real trouble, and this confusion calls for a special regard to the following considerations: *First*, infected cattle from the South may show no patent signs of the disease and yet healthy cattle will become most fatally infected by contact with the yards, fields, bedding, cars, troughs, scales, etc., which the diseased cattle have visited; *second*, Northern cattle are carelessly purchased in the markets, in warm weather, after they have been exposed therein to the virus left by the Southern cattle, and are then taken to farms for grazing, only to be attacked with Texas fever, and then die with what the farmer will mistake for another disease; but, *third*, while infected Southern cattle will communicate the scourge, with most disastrous results, to Northern cattle, the latter, when so infected, do not transmit it to others—that is, the virus loses its potency in one remove from the Southern cattle. Hence, it is never safe to buy cattle in the market for grazing *during warm weather*, for one can not be *sure* that they have not been exposed to the poison of infected animals from the South. A hard freeze will render the virus harmless, and any inclosures, roads, cars, etc., in which infected Southern cattle have been can not be used with impunity until after the following winter. They should, so far as possible, be scrupulously closed against other cattle until that time, and it is better to

scatter in them the heavy oil of tar or strong carbolic acid. Though the disease generally destroys those which are attacked, we can fortunately prevent its spread by excluding from our herds the cattle from the districts in which it originates. If it does invade Northern cattle, they will not transmit it to their mates, and their loss will be the end of the trouble, *provided no infected Southern cattle are in the herd.*

RHEUMATISM.

Rheumatism is caused by wet and changeable weather, by exposure to cold when warm, or when weak from some illness, by damp, marshy pastures, and the like.

Symptoms.—The *acute* form is marked by fever; affected parts hot, painful and swollen; soon lameness; dry skin; constipation; reluctance to move and inclination to lie down; diminished appetite; listlessness; sometimes tremors and adhering skin; lessened or wholly suppressed milk in cows. In the *chronic* form, which is more obstinate, there will be an absence of fever; parts affected painful, but not so hot and stiff as in the acute type; nearly all parts affected, but mainly the joints, the disorder shifting around.

TREATMENT.—Aconite is always best for the first, and is indicated by fever, cases resulting from cold, and irregular, jerking pulse, five to ten drops every two to four hours being suitable as the dose. Bryonia is needed after the fever; or, if the fever has not wholly disappeared, give this and aconite in alternation, if the swelling (especially in the legs, shoulders and sides) is not confined to the joints and is not particularly tender; and if the animal lies down, and the pain is worse by slight motion. Arnica is especially good for cases resulting from over-exertion; for swelling and pain confined mainly to the joints; also for tenderness of the skin. Arsenicum is valuable if the feet be tender, and the animal trembling and reduced in condition; and it is also useful for cold, swollen joints, sweats, alternating heat and chilliness, and heart-complications. Gelsemium is invaluable for terrible pain; aggravated symptoms at night; loss of the use of the affected parts; swellings, shifting from joint to joint; legs affected and marked by coldness and paralytic weakness. Rhus is needed if stiffness and lameness are more noticeable when the animal begins to move after rest. Should the above remedies fail or give only partial relief, give sulphur a few days, returning afterward to the remedy especially indicated; it is also good to prevent a relapse in changeable weather. Give plenty of clean, dry straw, in a warm place. Rub swollen joints once or twice daily. In *chronic* forms the cattle should never be exposed to cold or

stormy weather, and if turned out in the day in cold weather, should be comfortably stabled when brought in. Give a diet of milk, or milk-and-water gruel, with carrots or clover. Refer to the treatment of Rheumatism in the Horse for local applications and coverings.

LUMBAGO.

This is a rheumatism in the muscles of the loins which is caused by wet or cold, and attended by lameness, first in one leg and then in another, the animal walking stiffly and painfully, and evincing tenderness in the loins.

TREATMENT.—Treat as under the above article on Rheumatism. Keep the animal comfortable, covering the loins with woolen blankets.

DROPSY.

This consists in a collection of water in some part of the body, caused by bad feed, poorly-kept stables, neglected or mismanaged colds or other diseases, and like influences.

Symptoms.—If it be *general* dropsy, swelling begins at the feet and extends to all parts of the body, and, if they be pressed with the fingers, the indentation remains a short time. If it be dropsy of the *chest*, there are feebleness and langour, very difficult breathing, feeble and irregular pulse, and fore legs standing apart, the motion of the water being heard upon striking the chest. If the *abdomen* be especially affected, it is distended and the motion of the water can be heard, when the animal is lying on one side, by striking on the opposite side. Occasionally draught-oxen are troubled with dropsy of the legs. In addition to the symptoms just named under the special forms, there are generally dry skin; much thirst; poor digestion and appetite; scanty urine; paleness of the eyes and inside of the mouth; weakness; loss of strength; death in some cases.

TREATMENT.—Immediately treat the first symptoms, for the disease is often curable only at this stage. Be careful not to mistake the swelling which is incident to general dropsy for an improvement in the flesh. For remedies and general care refer to the article on dropsy in the Horse.

FOOT AND MOUTH DISEASE.

This is a contagious fever that is marked by ulcers and vesicles about the mouth and hoofs, and may be communicated to man by the milk of affected cows. It is epidemic, spreads by contagion, and animals are predisposed to it by poor food and housing, cold and wet, draughts of cold air, filth, and

reduced condition. The virus is potent for months and may be communicated by the clothes of attendants, by food, manure, places trodden by infected animals, the milk (to calves), and other agencies. Any animal, including dogs, cats, swine and poultry, may be affected by the virus which is in the discharges and milk.

Symptoms.—Chill; dullness; stupidity; eruptions on the hoof, mouth and teats; diarrhœa; dim, watery, blood-shot eyes; alternate heat and coldness of horns, ears and nose; arched back; diminished chewing of cud; milk decreased, yellow and thick; udder swollen, hot and tender; hair staring and harsh; pulse somewhat quickened; temperature increased, perhaps to 103° or 104° ; flow of saliva; pain in the mouth, with suppressed eating. The vesicles in the mouth are first small and red, then whitish-yellow, as large as a bean, and transparent, then filled with a pus-like fluid, bursting in about eighteen hours, and leaving sores which may unite and form deep, irregular ulcers; the nasal membrane may be affected. The vesicles on the feet first appear on the crown of the hoof and in the cleft, soon bursting; they cause pain, swellings, lameness or inability to stand, and the bones may be diseased and induce serious disorders. The vesicles on the teats are similar to those on the mouth, with soreness and swelling, and upon drying leave scales. Occasionally vesicles appear in the nostrils and on the muzzle, eyes and vagina. In *severe* cases, high fever ensues, ulceration increases, the animal is exhausted, loses flesh, discharges bloody mucus from the mouth and offensive matter from the nose; swollen face; foul breath; small, rapid pulse; grunting; quick breathing; belly and legs dropsical; diarrhœa; hoofs drop off in pieces; death in nine or ten days. In *favorable* cases, the fever subsides in about four days, and the symptoms decline for a week or two, when the animal recovers.

In milch cows the case is often complicated by the vesicles bursting from pressure in milking, when ulcers form, the cow resists milking and holds back the milk, thus promoting inflammation and perhaps hardening of the udder; or parts of the udder may fall away in consequence of internal ulcers, making the cow comparatively useless for milk. In such cases abortion is frequent. Infected calves usually die from the inflammation of the stomach and intestines which supervenes.

TREATMENT.—Mercurius should be given for heat, redness, dryness and swelling throughout the mouth; red spots on the mucous membrane of the mouth, which become ulcerous, burst, and unite; swollen tongue and face; abscesses in other parts; slimy, stringy, bloody, offensive discharge from the mouth. It is also useful in aiding the formation of matter and reducing hardness. Antimonium tartaricum is serviceable in alternation with mercurius. Arsenicum may be given at the beginning for harsh,

staring hair, cold legs and ears, and indifference. Dilute hydrastis is invaluable as an application to the sores, and for soothing and healing the mouth. Antimonium muriaticum is often beneficial when applied between the parts of the hoofs, if the soreness is excessive. Afford a quiet stall; plenty of straw, and fresh air of a moderate temperature; all the water that is wanted; soft food, such as milk, boiled grain, meal and water, bran, and mashes. Give only pure water for the drink. Bathe the feet occasionally with warm water. If the udder is affected, strip out the milk frequently. As a preventive, avoid the infection or contagion, if possible; observe absolute cleanliness; disinfect with carbolic acid, chloride of lime or sulphurous acid all places where the cattle stay, and even then such places should be closed against other animals for a long time. A diseased animal should not be removed from its place of sickness for at least two weeks after full recovery, and then only after it has been thoroughly treated with a wash of carbolic acid. The milk should be buried deeply. Though it may do no harm to feed it to the pigs after it has been boiled, it is better to bury it. Take great pains to keep the virus out of the bodies of attendants. Bury or burn the dead. If other animals are allowed to eat the flesh of such patients they will contract the same or a similar disease.

FOOT-FOUNDER.

This disorder is marked by inflammatory fever; loss of appetite and spirits; dry, hot mouth; slow and infrequent chewing of the cud; high-colored urine; hard dung; poor and scanty milk. It is uncommon among cattle. For fuller particulars, see the corresponding disease in the Horse.

FOOT-ROT.

This is caused by injuries from blows; gravel between the parts of the hoof, as well as thorns and any sharp body; moist soils; long walks on rough roads.

Symptoms.—Sudden lameness; hoof hot, swollen, and tender on pressure, especially about the crown; pus forms, if the trouble is not arrested, passes upward, and escapes from the top of the hoof, the horny crust falling off.

TREATMENT.—Put the animal on dry, soft litter. If injuries by blows or long walks be the cause, apply to the foot a bran-poultice, mixing in a little arnica-lotion. If pus forms, open the gathering with a lancet when it has pointed, and dress with calendula-lotion. If there is an unhealthy discharge and slow healing, apply carbolic-acid lotion.

SWOLLEN JOINTS.

For swollen *foot*, caused by injury, apply arnica externally and give it internally; for that resulting from cold, use dulcamara; for cases arising from dropsy, give china and arsenicum; for that caused by movement, but relieved by rest, give rhus; if the sole be hot, use squilla; if the general swelling of the foot be hot and rather hard, bryonia; if the swelling be near the fetlock, thuja.

If the *thigh* be swollen from a bruise, use arnica externally and internally; if the swelling is hot and hard, give bryonia; if damp and cold, give arsenicum and china, followed by sulphur.

For swollen *knee*, caused by a bruise, use arnica internally and externally; if the swelling be old and painful, china; if not painful, pulsatilla.

DISEASE OF THE TAIL.

Occasionally the hair falls from the tail, matter comes from the end, and ulcers form and involve the bone, causing parts of the tail to fall off. This is generally fatal, though arsenicum, mercurius and sulphur may be serviceable. Sulphurous-acid lotion may be applied to the diseased parts.

WATER ON THE BRAIN.—HYDROCEPHALUS.

Water on the brain of a calf causes enlargement of the head and symptoms similar to those of apoplexy (see Apoplexy), except that its symptoms are slow and gradual, while those of apoplexy are rapid and sudden. Remedies may be selected from those given on Apoplexy in the Horse.

INSECTS IN THE HEAD.

Symptoms.—Increased heat of the ears and roots of the horns; dry muzzle; quick, small, full pulse; little appetite; absence of the cud; staring coat; dullness; seeming lack of consciousness; loss of flesh; pain; listlessness; giddiness; falls; head fixed on one side, or turned from one side to the other; unsteady movements; rapid turning around in one place, followed by falling, and then a repetition of the same.

TREATMENT.—Give belladonna for dullness followed by violent or unsteady movements, and cantharis for frequent changes of the body and of the head. Graphites may be useful for listlessness, with drooping head and distressed manner. Yet medical treatment can be of little avail.

INFLAMMATION OF THE EYES.

This affection of the eyes is caused by violence from a blow; irritating matter in the eye, as dirt or hay seed; cold; sudden changes of temperature; and it may be inherited.

Symptoms.—Dull, watery, closed eye; corner red or swollen; membrane attached to the eyeballs streaked with blood-vessels; eyelids hot, swollen and tender, afterward glued together; sometimes dilated pupils; tears.

TREATMENT.—Cases resulting from violence should be treated with doses of arnica and conium; some cases require an internal and external use of euphrasia, with doses of belladonna and cannabis. If the presence of foreign matters be the cause, remove them and use arnica and conium internally and externally. If a cold causes the disorder, give camphor, bryonia and euphrasia; belladonna is also to be used for scalding tears, enlarged pupils and marked redness. If eruptions about the mouth, and swollen tongue and throat appear, as they do among young cattle on wet lands, and if slight ulcers appear on the front of the eyeball, give sulphur and remove the animal to a comfortable stable or shed. If the disease is hereditary, blindness will most likely result eventually. In these cases the animal enjoys apparent recovery at intervals, then suffers as before, though the inflammation may shift from one eye to the other, and a cure is at least doubtful. Refer to the remarks on Inflammation of the Eye in the Horse.

ULCERATED OR SWOLLEN EYELIDS.

These frequently exist independently of inflammation of the eye.

TREATMENT.—For ulcers at the edges, mangy skin, and an anxious manner, give sulphur or mercurius corrosivus. For dropsical swellings which retain the impression of a finger pressed upon them, as in dropsy, give arsenicum, with good food.

Swellings differing from the last in containing gas instead of fluid occur among well-fed and fattening cattle, and are best treated with pulsatilla.

CATARACT.

A cataract may develop after severe inflammation of the eye, when the eyelids are red, sight gradually impaired, and a whitish, brownish, or yellowish body forms on the pupil.

TREATMENT.—The treatment is the same as for Cataract in the Horse. An impairment of the sight of the ox does not, however, so materially affect his value as it does that of the horse.

INFLAMMATION OF THE EAR.

This derangement is usually caused by the presence of seeds, insects or bits of hay in the ear.

Symptoms.—The head hangs toward the affected side, the animal frequently shaking the ear, or rubbing it with the hind foot or against the wall; ear swollen, tender, and containing mucus or pus.

TREATMENT.—If an insect is in the ear, it will come out upon pouring a little sweet oil into the ear; other foreign bodies should be removed; then inject into the ear, with a small syringe, a lotion of arnica, one part to ten of water. If pus or an abscess has formed, give mercurius, alone or alternately with hepar. Belladonna or pulsatilla will usually suffice for swelling and tenderness, without threatened ulceration, and for great pain. For offensive discharge of pus inject diluted carbolic acid into the ear. Arsenicum may be useful in case an abscess forms.

CHOKING.

Choking is easily recognized by feeling the obstruction in the gullet, by the difficult breathing, violent attempts to swallow, and the discharge of saliva from the mouth. *Prompt action is imperative.*

TREATMENT.—An obstruction near the front part of the gullet may be removed by putting the hand, properly protected, into the throat and withdrawing it; but if it be too far down for this, take a strong stick, cane or willow, or still better, whalebone, four or five feet long, make it smooth, put on the end an egg-shaped bulb (the smaller end being attached to the stick), covered with soft leather and firmly fastened with strong strings, passing the string around the stick and back to the hand to prevent the bulb from remaining in the gullet if it should chance to slip off. With this instrument push the obstruction into the stomach. If the obstruction is reasonably soft, it may be crushed by carefully pressing the hands or two blocks of wood on its sides. In some cases it may be necessary for a surgeon to open the gullet. The greatest care and gentleness should be exercised in crushing it or forcing it downward.

POISONOUS PLANTS.

Poison from plants may cause suffering and death, though it may not be easy to detect the poison unless it is known that the animal has been among noxious vegetation.

Symptoms.—Loss of appetite; numbness; much thirst; grinding teeth;

stamping; the animal strikes the flanks and rolls, as in colic; swelling of the abdomen and other parts; sometimes fury, insensibility, paralysis and death.

TREATMENT.—Empty the stomach with a stomach-pump immediately, and force warm water into the paunch until the animal vomits, continuing until the stomach is entirely cleansed. Such a pump will usually not be at hand, and considerable quantities of olive or linseed oil will often be of advantage. Give camphor internally. Then use only the mildest food.

SWOLLEN BONES.

The bones may be swollen, very tender, and often attended with ulcerating wounds. The disorder is very difficult to cure.

TREATMENT.—Give mercurius corrosivus internally, and apply a lotion of the same externally, if the swelling is callous and hard. In chronic cases, when pus forms, one or two doses daily of silicea will be very useful, omitting its use at intervals. Protracted treatment is generally needed.

BREAKING OF THE HORNS.

This misfortune is attended with considerable bleeding, which may be stopped by fomentations of a lotion of arnica or calendula. If the horn is still warm, it may possibly be restored by replacing it at once and fixing it with bandages, covered with cloths frequently soaked in one of the lotions just named. Give arnica internally when used externally. Follow with symphytum, especially when the bone also is broken. Squilla is another useful remedy. Tie the animal so that rubbing the horn is impossible.

ABSCESSSES, SPRAINS, WOUNDS, DISLOCATIONS, ETC.

Among the miscellaneous diseases and injuries incident to cattle are many whose treatment is the same as that for the horse, and the reader is referred to their respective articles in Part II. In this number may be mentioned Abscesses, Ulcers, Open Joints, Cuts and other Wounds, Bruises, Ruptures, Dislocations, Fractures, Sprains and Strains of various kinds, and other forms of Mechanical Injuries.

CAUTIONS ABOUT DISEASED CATTLE.

A few words may be said in conclusion upon the liability of disease arising from the careless or unscrupulous regard paid to diseased cattle.

The chief aim in breeding and raising them is the production of beef, milk, butter and cheese for the table. On the part of the consumer of these staples too much caution can not be taken to patronize only such butchers and grocers as are known to be careful and conscientious in the selection of what they sell, as this is the only direct means of guarding their tables which is at the command of those who do not keep their own cattle. On the part of the breeder and raiser there is a sacred obligation to avoid the use of cattle which are not in a good state of health. To the unscrupulous farmer or raiser, who cares only for the dollars which he is to get, no suggestions are of any use. Others will conscientiously choose the best of food for stock which is intended for the production of meat and milk; will slaughter, sell, or milk for use only those which are in health; will not only exclude from the market the products of those of his herd which are affected with anthrax, foot and mouth disease, ulcers and sores in general—thus precluding the chances of the human family taking the same or similar diseases—but will take the additional precaution to keep the flesh, milk, droppings, urine, etc., from swine and poultry in particular, since such affections, so contracted by these two, have an almost immediate entrance into the human family through the flesh, lard and eggs.

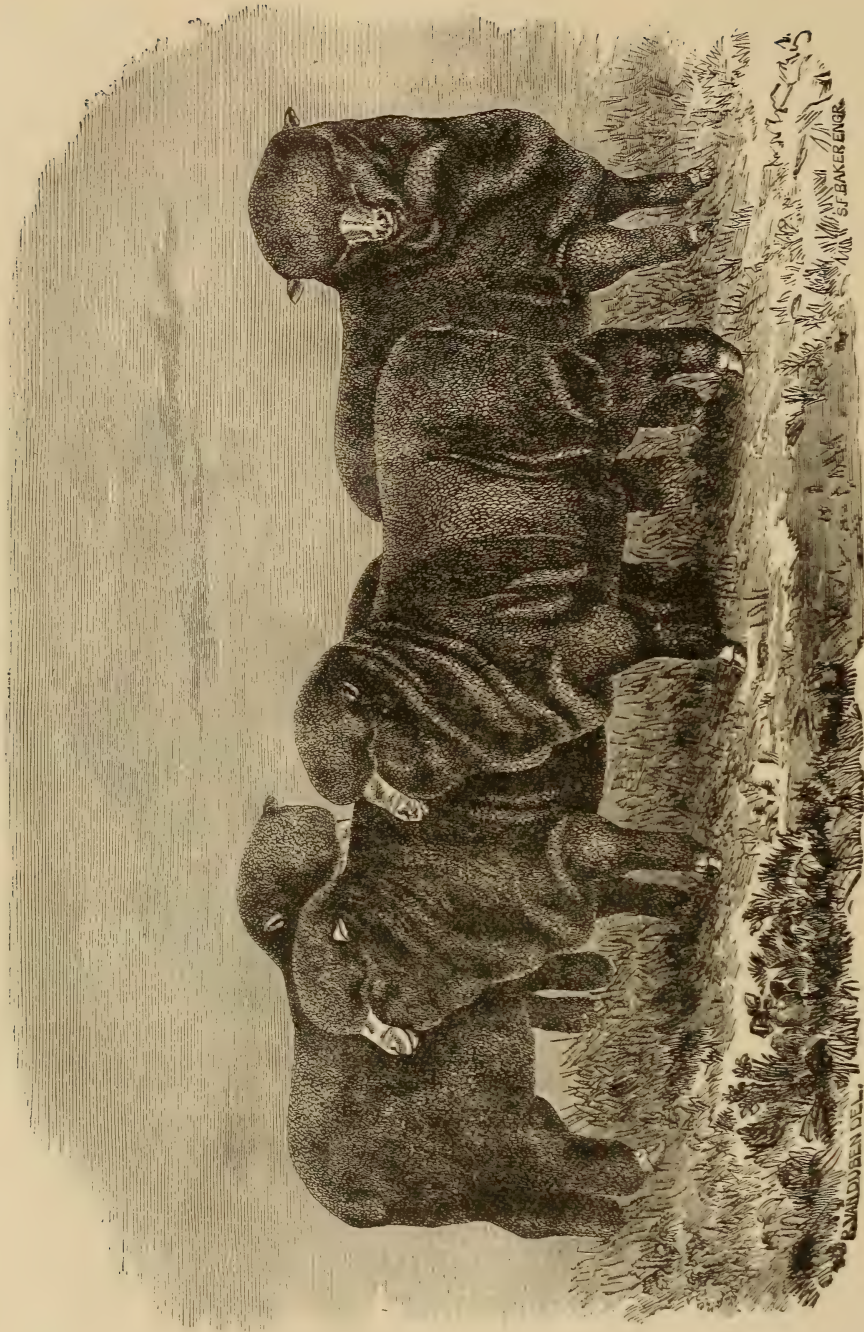




PART IV.

THE SHEEP AND ITS DISEASES.





THE FULL-BLOODED MERINO SHEEP.

PART IV.

THE SHEEP AND ITS DISEASES.*

STAGGERS.—GIDDINESS.

THIS is very dangerous, occurring most frequently in lambs, especially in those not over six months old, seldom among sheep over two years of age. It is caused by small insects in the head. It is said that these insects will produce tape-worm in a dog, that the joints of tape-worm from the dog will produce the insects in sheep, and hence, that the presence of dogs will induce this disease. A cold, wet season and low, damp localities favor the development of the disorder.

Symptoms.—Stumbling; turning round often; head turned to one side, or held high up and forward; impaired appetite; indifference; wild look; eyes bluish, the pupils enlarged and the eyeballs prominent; then blindness, stupor, loss of flesh, exhaustion and death.

Treatment.—Whether the bone be absorbed or not, a veterinary surgeon may perform an operation to remove the insect. In any case, the treatment should be applied immediately upon the discovery of the disorder. Belladonna is the only medicine that has effected cures. It may be given every day at first, then every two days until the affection disappears.

INFLAMMATION OF THE BRAIN.

Inflammation of the brain, in which the brain is gorged with blood, is caused by over-driving, high feeding, blows on the head, sunstroke, and the like. It is most common among lambs.

*The reader should carefully note the remarks upon "Signs of Health and Disease" on page 539. He will also readily infer that all requisite information upon the treatment of the few ailments of the Goat will be easily derived from the following directions upon the Sheep. The organism and habits of the Ox and Sheep are so similar that their diseases are generally the same, and references to Part III should be made for treatment in all but a few diseases of the sheep. The remarks upon "Anatomy and Physiology" on pages 735-737 are of special importance at this point.

Symptoms and Treatment.—Hot head; dullness; drooping head and ears; bright, red, staring eyes; staggering. Later, the animal looks wild, dashes about, falls heavily in convulsions and dies. Treat as directed for this disorder in the Ox on a preceding page.

APOPLEXY AND PARALYSIS.

Apoplexy is very common in sheep, and usually arises from rich pasturage, over-driving, and hot weather.

Symptoms and Treatment of Apoplexy.—Dullness; sleepiness; red, fixed eyes; enlarged pupils; quick, hard pulse; loud breathing; heaving flanks; distended nostrils; falls, convulsions and death. Treat as for Inflammation of the Brain in the Ox. Give scanty food at first. Since another attack is liable to occur, it is best to fatten the animal for slaughter.

Paralysis is sufficiently described as related to the Horse and Ox, and the reader is referred for treatment to the articles devoted to Paralysis in those animals. Rub the parts. Give gruel as food.

HYDROPHOBIA.

Hydrophobia is caused by the bite of a mad animal, usually a dog, and its symptoms appear from two to twelve weeks after the bite. In addition to the symptoms among cattle (which see), the sheep chase one another, lose flesh and appetite, are restless, and have increased sexual instinct. Ewes often become stupid and paralyzed and die without violent symptoms, while lambs have fits, and rams and wethers dash about and violently butt any object in reach.

TREATMENT.—When a rabid dog has been in a flock, and it is not absolutely known which sheep are affected, give belladonna to the whole flock once a day for several days, then once a week for some weeks. If it is known which ones are bitten, they alone need be so treated. For fuller treatment see Hydrophobia in the Ox and Dog.

FITS.—EPILEPSY.

This disorder frequently occurs an hour or two before daybreak on a cold morning. On rising from the bed the animal stares, staggers, falls, struggles, kicks, rolls its eyes, grinds its teeth, foams at the mouth, and sometimes passes dung and urine involuntarily; soon the paroxysm subsides and the animal appears in good health. The fit may occur daily, and its repetition will exhaust the animal and perhaps prove fatal in time.

TREATMENT.—On the first attack give a few doses of aconite during the first day, followed by belladonna or stramonium. See Epilepsy in the Horse. Change the pasture and give comfortable shelter.

LOCK-JAW.—TETANUS.

Lock-jaw is fully treated in the sections devoted to the Ox and Horse, and to them the reader is referred. It is not so difficult of cure among sheep. Sufficient shelter for lambs, and for ewes in labor, during cold rains and severe weather, and care in castration, will avert many cases.

WATER IN THE HEAD.—HYDROCEPHALUS.

Water in the head is not uncommon in lambs of weak constitutions, and those produced by ewes likewise affected. It is an accumulation of serous fluid on the surface of the brain.

Symptoms.—These are readily noticed, the head being enlarged, and the hind quarters perhaps paralyzed. Sometimes the disorder comes on gradually; the lamb staggers; the appetite is impaired or lost; the bowels are loose at one time and bound at another; enlarged skull; flesh lost; death. If the disorder exists at birth, it may be necessary to crush the skull to save the ewe in labor.

TREATMENT.—The disorder is fatal, though relief may be given by belladonna and hellebore. The best preventive is a complete change in the stock for a new flock, with special care of the ewes in the lambing-season.

BLAIN.

Blain is an infectious disease, with causes, symptoms and treatment similar to those given for the same disease in the Ox (which see). It will be noticed that the head and throat are greatly enlarged. Be prompt in treatment, and remove the diseased animal from the flock at once.

ULCERATION OF THE MOUTH.

This is at first marked by inflamed, hot, red mouth; swollen gums and tongue; free flow of saliva and mucus from the mouth. In a few days small white vesicles appear on the gums and palate, which break and leave ulcers; sticky saliva drips from the mouth; other symptoms being refusal of food and loss of cud. It is sometimes epidemic. At other times it accompanies foot-rot. Treat as for Blain in the Ox.

BLACK MOUTH AND MUZZLE.

This affection consists in scabby eruptions about the muzzle, eyes and ears, possibly on the whole surface. It is more common among lambs than sheep.

TREATMENT.—Give mercurius and sulphur internally, and at the same time apply to the eruptions, in severe cases, an ointment of that one of the two which is administered. Continue them until cured.

STRANGLES.

This disorder is an inflammation of the salivary glands, with formation of pus, but is uncommon among sheep. Its symptoms are fever, swelling under the lower jaw, and tumors which tend to form pus. Its treatment is the same as that for Strangles in the Horse.

HOOVE.—BLOATING.—TYMPANITIS.

Hoove is caused by greedy and excessive eating of clover, turnips, or other food, or by the engorgement of the gullet, the stomach becoming enormously swollen.

TREATMENT.—*Be prompt.* A surgical operation may be necessary. For this, and for the symptoms, as well as full treatment, see the same disease in the Ox. Ammonium causticum and colchicum are first required.

DIARRHŒA.

Diarrhœa is caused by bad food at any season; new grass in the spring; in lambs, poor milk and the first grass that is eaten. In many cases it may be a symptom of another disease, when the cause itself must be treated. In some instances it needs no attention, as it may be but a natural way of discharging injurious matter. A change of food should generally be made, and lambs may be dipped in cool water every morning for two weeks and allowed to dry, keeping them on old soil. For fuller treatment, see Diarrhœa in the Ox.

DYSENTERY.

Dysentery, an inflammation of the mucous membrane of the intestines, is often confused with diarrhœa, which is only a natural way of discharging injurious matter. It may, however, result from neglected diarrhœa.

Treat as for Dysentery in the Ox. Give a diet of gruel and a little hay, and remove the exciting cause. Wash off the slimy mucus from the thighs and tail with soap and warm water, putting on sand or fine dirt to keep off flies and prevent the tail from adhering to the quarters.

COLIC.

Colic is not common among sheep, but lambs over-fed with milk, herbs; or rank pasturage may be affected with it. For symptoms and treatment, see Colic in the Ox, noting particularly the symptoms which distinguish it from Inflammation of the Bowels, with which it is easily confounded.

WORMS IN THE INTESTINES.

Worms in the intestines of lambs are indicated by disordered digestion, swollen abdomen, much mucus in the nostrils, diminished chewing of the cud, and wasting about the loins. Its full treatment will be found under the same disorder in the Ox, cina and felix mas being the chief medicines.

INFLAMMATION OF THE LIVER.

This is very common among sheep. It is often fatal and frequently leads on to rot, a very serious malady (see next disease). It may be produced by excess of nourishing food, but generally, it is believed, it results from miasmatic influences, as from damp pastures that have been overflowed, and other decaying vegetation. It is sometimes epidemic. Its symptoms are fever; dullness; quiet mood; hanging head; constipation; yellow skin and eyes, especially in the corners of the latter; heaving flanks; lameness in the right fore leg; pain from pressure on the right side; early death; or a chronic form ensues, ending in rot. Appropriate treatment is given under Inflammation of the Liver in the Ox.

ROT.—FLUKE DISEASE.

Rot is a common disease, and the most destructive one known among sheep. It results in a breaking up or rotting of the liver and internal tissues and organs. Careless thought should not produce a confusion of this with foot-rot, because of any similarity of names. Its chief causes are miasmatic influences, as decaying vegetable matter on miry lands, in the beds of streams that are nearly dry, and in water lying on any pasture after rains. Bad food, watery grass and thawing grounds are all favorable to its

occurrence, while animals are predisposed to it by shearing in bad weather, exposure to cold and wet, and by the general conditions conducive to a low state of the system. The essential characteristic of the disease is the presence in the liver and gall-ducts of parasites, or flukes. These derange or wholly destroy the functions of the liver and lead to most serious structural changes in that organ, finally reducing it so it will break on the slightest pressure, or almost dissolve away when boiled.

Symptoms.—Though the disease sometimes develops rapidly, its symptoms are more likely to be so gradual as not to attract attention at first. They begin with a slow walk, drooping ears and shaking of the head, though the animal may appear in good condition, and even gain flesh. Then appear dullness, slowness, and indifference to the touch of attendants, the eyes being dull, watery and yellowish; eyelids swollen; skin yellow, puffed, and easily retaining the impression of the finger; pale lips, palate and gums. Then one may notice a loss of flesh; hollow flanks; breath very offensive; tongue, muzzle and eyes very yellow; rigid back; wool discolored, coming off easily, perhaps with patches of skin; skin loose and flabby, with bluish-black spots on it; soft flesh, producing a crackling noise when handled; bowels loose at one time, then bound; scanty, high-colored urine; loss of appetite; excessive thirst; dropsical swellings in the abdomen and other parts; loss of cud; nostrils clogged with sticky mucus; copious tears; on the upper part of the neck and lower part of the jaw appears a soft, inactive tumor, larger during grazing, and disappearing during the night; rapid, weak pulse; quick, short breath; the animal continues lying down; weakness; listlessness; wasting; death. Another form of rot, occasioned perhaps by cold, by wet, by shearing in bad weather, and the like, is marked by a continual, distressing cough, in addition to many of the symptoms above named.

TREATMENT.—First remove the sheep to *dry* quarters and give a diet of corn, beans, peas, and other nutritious but not juicy food. Keep a good supply of rock-salt within reach of the animals. Give arsenicum for weakness, swollen belly, loose skin, and soft flesh, and alternate it with china if the skin be yellow. Bryonia is suitable for quick, difficult breathing, and deranged urine and dung. Yet these remedies can only relieve such symptoms for a time; they can not cure the disease, for this involves the destruction of the flukes. Tonics which act upon the liver are the main reliance, and even those will be of little service if many of the parasites are present.

Keep the sheep away from low pastures and such influences as were mentioned above as producing the disorder. Give salt daily when flukes are known to be present, or are suspected. Sheep should not be admitted

to infested fields as a rule, though the chances of infection are greatly reduced by simply keeping the flock out of them when the grass is wet with dew or rain. Isolate infested animals, and even destroy them in some cases.

Professor Law names the following, a half-pint daily to each sheep:

Linseed, rape, pea, oat, barley, or unbolted	
wheat flour,	40 lbs.
Powdered gentian or anise seed,	4 lbs.
Sulphate or oxide of iron,	1 lb.
Common salt,	4 lbs.

Though this may be given with some hopes of benefit, cases that are bad or confirmed will generally resist the best treatment.

DISORDERS OF THE RESPIRATORY ORGANS.

The disorders of the breathing-apparatus in the sheep are in general the same as those in cattle, such as Cough, Cold, Catarrh, Bronchitis, Laryngitis, Pneumonia, and occasionally Consumption. Their symptoms and suitable treatment are given under the appropriate articles on the Ox. It may be remarked that a form of *cold in the head*, characterized by a thin, watery, mattery discharge, is contagious, and that an animal so suffering should be isolated to prevent a further spread.

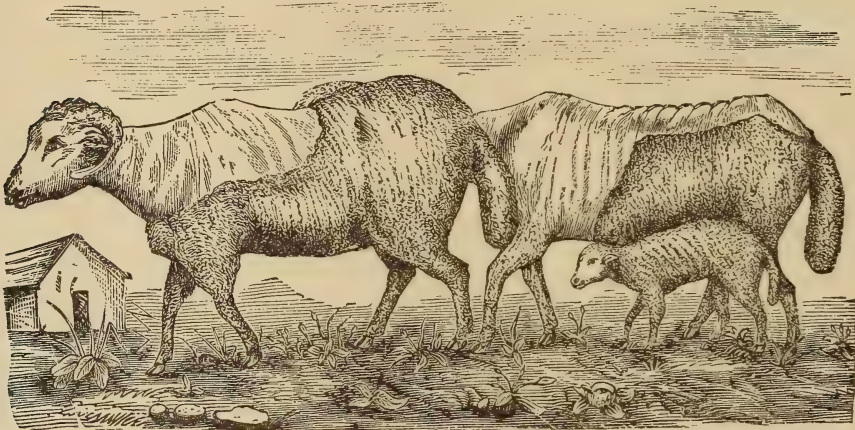
SCAB.

This is a very destructive disease, similar in general to mange or itch in other animals. It is due to the presence of parasites, which are easily transmitted from one sheep to another by direct contact, by occupying places in which infested sheep have been kept, or by rubbing objects which they have touched; and even attendants or dogs will carry them to the flock. The disorder is more common in dirty, weak, unhealthy, and long-wooled sheep. In addition to itching and scratching, it is characterized by pustules, ulcers, scabs, and falling of patches of wool.

TREATMENT.—First moisten and remove the scabs with warm soap-suds. If the wool is heavy, patience will be requisite, and care will be needed to avoid staining of the fleece. Professor Law gives the following as suitable and safe:

Tobacco,	16 pounds.
Oil of tar,	3 pints.
Soda-ash,	20 pounds.
Soft soap,	4 pounds.
Water,	50 gallons.

The tobacco is to be boiled in some water, and the oil, ash and soap dissolved in boiling water, then water is to be added until fifty gallons in all have been used. The preparation is to be applied at a temperature of about 70° F., each sheep being kept in the bath three minutes, the attendants meanwhile breaking up the scabs and rubbing the liquid into all parts of the skin. Upon taking the sheep out, squeeze the liquid out of the wool so it will run back into the bath. It may be necessary to repeat the application two or three times. The amount given above will be enough to treat fifty sheep once. In persistent cases it will be necessary to shear the



200. A BAD CASE OF SCAB.

sheep. In such instances, or whenever the wool is very short, some oily application is advised, since it will not so readily wash off, and the author quoted recommends one part of oil of tar to forty parts of castor oil. Avoid applications which contain mercury, arsenic and other poisonous ingredients. Provide clean, dry quarters, without crowding, fresh air and nourishing food, such particulars being essential in treatment and very serviceable in preventing the disorder in animals not already suffering from scab. To eradicate all traces of the malady, observe the directions upon cleansing the infested places and objects which are recommended for Mange in the Horse.

LICE AND TICKS.

These are very troublesome to sheep. Ticks most often infest the fleeces of ewes in the spring, and, passing to the lambs, make them weak by drawing their blood; and they may remain in a fleece alive for a year after it is clipped.

TREATMENT.—To a dilution of one part of the tincture of tabacum and ten of water add an equal quantity of vinegar, and with this saturate the wool; or, as a less harmful though equally efficacious expedient, thoroughly soak the skin and wool with olive oil, and afterward wash with soap and warm water. The use of soap and water alone is unavailing. A liberal rubbing with a lotion of equal parts of sulphurous acid and glycerine or water will drive away the insects; dilute carbolic acid will do the same.

FLY IN THE NOSE.

In the summer the gadfly deposits its eggs in the flaps of the nostrils of the choice sheep in a flock while asleep; larvæ are soon hatched, pass up the nasal cavities to the small nasal sinuses, and descend in the spring, burying themselves in the ground and coming out as flies in the summer. In the passage upward and downward the larvæ irritate the delicate membrane.

Symptoms.—Inflamed nostrils; pain; dizziness; stamping; violent sneezing; tossing of the head; discharge of larvæ from the nose with much mucus.

TREATMENT.—Give sulphur internally, and burn it under the sheep's nose so it can inhale the fumes. The sneezing caused by the fumes will expel the larvæ, and they should be destroyed if not already dead. Avoid blowing powders up the nostrils.

MAGGOTS IN THE FLESH.

Sheep that are dirty about the tail and quarters, and those that have sores, are attacked by a large blow-fly which deposits its eggs in the filth or sores. The eggs produce maggots which burrow in the skin and cause swelling, pain, low spirits and weakness. If the maggots are not promptly removed, pus and ulcers will form, and death ensue.

TREATMENT.—The best treatment is to search out and remove the maggots, and keep the affected parts clean with diluted carbolic acid. *Carefully avoid all mercurial applications.*

GOITRE.

This is an unsightly tumor which arises from an enlargement of the thyroid gland, situated on the side of the neck. In lambs the enlargement may extend from the jaw to the breast-bone. It is probably caused by mineral constituents of the drinking-water, and is most common in localities

in which the water contains magnesian limestone. The tumor is at first soft, but afterward becomes tense and hard, and will be gritty if opened.

TREATMENT.—Provide pure rain water. Give iodine internally and apply the same externally. *Spongia* is an excellent internal remedy, as is also *drosera*. A local use of a lotion of *mercurius corrosivus* will be beneficial in some cases, alone or used at intervals, with iodine applied at other times. To prevent goitre in lambs, give the ewes in winter rain-water, good feeding, and an abundance of open-air exercise. Neglect of such precautions has been followed by the loss of the entire produce of the year. It will take a long time to effect a cure of a case of real goitre.

FOOT-ROT.

Foot-rot is either mild or malignant. The *mild* form is an inflammation of the space between the two parts of the hoof and is usually associated with Ulceration of the Mouth (which see). It is caused by sand or gravel in the affected part, hard roads, hot weather, and fatigue. The inflammation often extends to the whole foot, with ulcerations, the pastern and fetlock joints perhaps becoming involved. There is lameness in one foot, or, if both front feet are affected, the animal creeps about on its knees, and pain and fever are present. The *malignant* form affects the whole foot, and is caused by a change from dry, upland fields to soft, grassy meadows. The hoof becomes softened, grows irregularly, cracks and splits; foreign matter in the cracks irritates them, producing inflammation and disorganizing the parts, attended with ulcers, detachment of pieces of the foot, and disease of the bones, cartilages and ligaments.

TREATMENT.—At first remove all foreign matters, foment the hoof with tepid water, and dress all sores with a lotion of *arnica* or *calendula*. Remove matter, rough edges, and decayed horn, cutting open ulcers to the bottom if it be necessary to reach the matter, and syringing out the sores. Then apply a poultice of turnip or oatmeal, followed by bandaging with *calendula*-lotion. If, however, the formation of pus continues, use the poultice again. Bandages should be continued until the hoof becomes sound, and all irritating substances be kept out. During the formation of pus give *silicea* or *hepar*, followed by sulphur or thuja. See Foot-Rot in the Ox.

SWELLING OF THE JOINTS.

Such swelling is rather common among lambs. It is an inflamed condition of the joints, usually the knee, sometimes the hock and fetlock, and arises from damp and cold.

Symptoms.—Swelling; heat; stiffness; pain; general disorder of the system; the symptoms grow worse, ulceration sets in, with matter discharged; chronic lameness or death.

TREATMENT.—Shelter the animal; foment the joint and bandage it with rhus-lotion; give aconite for fever, and hepar or silicea if pus forms.

MISCARRIAGE.—ABORTION.

Miscarriage is frequent in ewes, though seldom fatal, and even seems to be epidemic. It may arise from weakness; intercourse with a ram or hasty driving during the latter stages of pregnancy; a sudden fright. It is apt to occur when a cold winter is followed by a wet summer.

TREATMENT.—If the disorder seems general among the ewes, give each of them a dose of arnica once a day for a few days. If miscarriage has begun, give secale every six or eight hours. Ferrum sulphuris is beneficial if the trouble seems to result from a weak system. See other remedies and fuller information in the article on Miscarriage or Abortion in the Cow.

INFLAMMATION OF THE UDDER.

This disorder of ewes arises, during the lambing-season, from cold and wet, damp, easterly winds, or lying with the udder on the cold, wet ground. Its progress is rapid and often fatal; hence treatment must be prompt.

Symptoms.—Udder swollen, very tender, and growing hot and hard; quickened pulse; loss of appetite; fever; perhaps ulceration.

TREATMENT.—Afford a dry, warm shelter. Give aconite for fever, five or six drops three or four times daily. When the fever subsides, give belladonna and bryonia in alternation two or three times a day. After the above remedies, if hardness remains in the udder, give a few doses of sulphur. Mercurius will be especially needed if pus or ulceration ensues. Empty the udder of its contents by hand if the lamb will not do it. Fuller information is given in the section on this disorder in the Cow.

DISORDERS INCIDENT TO LAMBING.

Milk or Puerperal Fever is much to be dreaded. For causes, symptoms and treatment, consult the section on the same disorder among cows.

Inflammation of the Pudenda may be produced by injuries to the parts of generation from forcibly taking the lamb away from the ewe. The pudenda are hot, painful and swollen. Wash the parts well with

tepid water and bathe with arnica-lotion. Give arnica internally two or three times a day. Aconite alternated with sulphur is sometimes useful.

BRAXY.

Braxy is a term which is used with a variety of meanings. An inflammation of the mucous membrane of the stomach and bowels is known as *dry* braxy; if the serous membrane of the abdomen is affected, the disorder is known as *water* braxy; another form that is marked by diarrhœa or dysentery is known as *dumb* braxy. *True* braxy, which we are now considering (the others having been sufficiently noticed in other places and under different names), is a blood-disease, and is caused by excessive eating, particularly of turnips and rich food; by a change from poor to rank food; by whatever will derange the general system; and by contagion in some cases. It is sudden in its attacks, so far as visible symptoms are concerned, and is very often fatal, death not unfrequently occurring in a few hours. It arises particularly in frosty weather.

Symptoms.—Staggering; quick, bounding pulse; hot, dry mouth; quick, hard breathing and panting; hard, dry dung and dark, scanty urine, both difficult of passage; weakness; the animal falls, rolls on its back, and dies; sometimes, however, the skin is puffed out and the underlying gas produces crackling if the hand is rubbed over it; in other cases the paunch is swollen out on the left side.

TREATMENT.—Treatment must be given in the first stages. In the earliest symptoms make the animal move about briskly. For prostration give arsenicum, ten drops every fifteen or twenty minutes. Should it be necessary to puncture the paunch (see this operation under Tympanitis in the Ox), nux vomica and ammonium causticum should be given, ten drops every hour until improvement begins, then once in two or three hours. Drench down small quantities of hot gruel, while the animal is kept in a warm place. If the dung is hard and the belly painful, warm water may be injected through the rectum. Should recovery ensue, be very careful about the food for some days. Shelter and avoidance of a sudden change to rich pasturage are useful in preventing the disease.

SHEEP-POX.

Sheep-pox is a very contagious and destructive disease, and its infection may be carried by other animals, by shepherds, and other means, and when its virus has been deposited on the pastures or in other places frequented by sheep, the disorder readily spreads. It may be communicated to a dog,

but not to man. It is of two kinds: the mild, in which the pustules are few, and remain distinct; the malignant, or "confluent," in which the pustules are many, irregular in outline, running into each other, rapid in their action, and generally fatal.

Symptoms.—In about a week from the time the infection occurs the animal leaves the flock, is dull and listless, with quick breath, rapid, short pulse, swollen eyelids and red membrane of the eyeball. Later, small, red, inflamed pimples are found in the skin where there is no wool, which rapidly increase in number and extend to all parts, but especially to the inner side of the thighs, the anus, the adjoining bare spots, the lips and the mouth; these then grow larger and appear as pustules, the system generally becoming disturbed, the thirst great, pulse tremulous, appetite impaired, cud lost, bowels inactive, or sometimes loose. In perhaps a week the center of the eruptions is transparent and elevated and filled with a fluid, at first clear, then turbid; the pustule now takes on a yellowish, opaque appearance, is generally flattened, the skin around it becoming pale; the pustule then dries. If the scabs or eruptions be rubbed off or broken, the healing will be slow. In ordinary cases the eruptions last sixteen or eighteen days, from their appearance to the natural falling of the scabs; then the animal, in favorable cases, recovers. In the "confluent" form the fever is very severe, becoming typhoid in character; pulse rapid and strong at first, then weak and tremulous; quick and offensive breath; blood-shot eyes; swollen eyelids; mucous membranes blue and congested; great pain in the back and limbs; intense thirst; offensive smell from the skin; the wool falls off in patches, or readily comes off with the hand. The pustules run together, forming a mass of rotten matter and ulcers; the face becomes disgusting, with swollen nose; yellowish discharge from the nose and mouth, pustules in the nasal cavities, and even back to or beyond the throat; great tenderness generally; prostration; diarrhœa; death in eight or nine days from the appearance of the eruptions.

TREATMENT.—Isolate infected animals to prevent the spread of the malady and do not return them until all scabs have disappeared. Keep the eyes, mouth and nostrils well cleansed with a weak dilution of carbolic acid. Keep rock-salt in reach of the sick and the well, and add a little vinegar to the water. Cool, dry, well-aired sheds, with comfortable bedding and protection from rains, should be provided. Give gruels of oatmeal or bran, and a drachm of saltpetre to each affected sheep, but avoid heat-producing foods in the main. Such local applications may be used for the pustules as were mentioned for Cow-Pox. Antimonium tartaricum should be given as soon as the disease is certainly known to exist, and it is also very useful in the eruptive stages. For much ulceration, offensive smell

of the breath and skin, and formation of pus, mercurius will be invaluable. Sulphur is efficacious when scabs are forming, and for completing a cure when it has begun. All objects that have been touched by the infected sheep should be thoroughly rubbed with strong carbolic acid.

Owing to the malignant character of the disease it is better not to undertake any treatment unless the infection has spread so far that the slaughter would involve a heavy loss. If it is detected in time, the safer and cheaper plan is to kill and bury or burn the infected ones and thus cut short the malady. When it has gained a start, good results may be obtained by inoculating the well with the virus of the sick, since it has been clearly proved that the disease taken by inoculation is much less fatal than when occurring by the natural mode of infection.

WOUNDS, SPRAINS, FRACTURES, ETC.

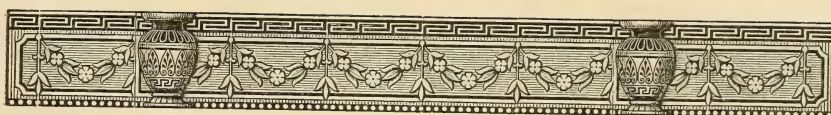
The suitable description and treatment of all such injuries as Cuts, Wounds in general, Dislocations, Fractures, Sprains, and the like, may be gained by reference to the sections devoted to them respectively in the Horse. Severe cases are best treated by an immediate slaughter, before the incident derangement of the system so far advances as to render the flesh unfit for food.

FEVERS, RHEUMATISM, DROPSY, ETC.

For the various forms of Fever, Rheumatism and Dropsy, the reader should refer to these diseases as they are found in the Horse and Ox. It may be said that a form of Dropsy known as Red-Water occurs quite often in sheep when they are first fed on turnips, and in lambs that are weaned in cold, damp surroundings. This type requires good shelter, a change of diet, and the treatment, in general, laid down for Dropsy in the Ox.

Disorders which occur more or less often in the sheep, and are not mentioned in this part of the work because they are sufficiently considered with reference to the Ox, are Thrush, Inflammation of the Bowels, Inflammation of the Spleen, Constipation, Loss of Appetite and Cud, Black Quarter, and several easily recognized diseases of the Skin.

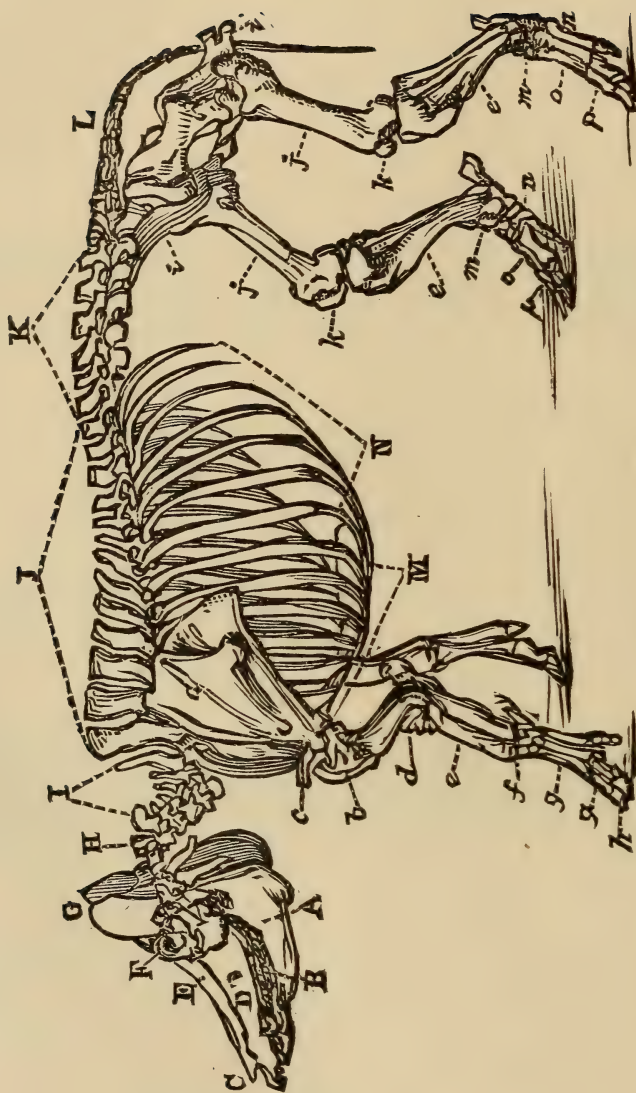
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PART V.

THE HOG AND HIS DISEASES.





201. SKELETON OF THE HOG.

A, Lower Jaw, B, Teeth, C, Nasal Bones, D, Upper Jaw, E, Frontal Bone, or Forehead, F, Eye-Socket, G, Occipital or Crown Bone, H, Atlas, or First Vertebra of the Neck, I, Other Vertebrae of the Neck, J, Vertebrae of the Back, K, Vertebrae of the Loins, L, Bones of the Tail, M, True Ribs, N, False Ribs, O, Shoulder-Blade, P, Round Shoulder-Bone, Q, Breast Bone, R, Elbow, S, Fore-Arm, T, Navicular Bone, U, First and Second Bones of the Foot, V, Bones of the Hoof, W, Haunch Bones, X, Thigh, Y, Stifle, Z, Hock, aa, Navicular Bones, bb, First Bones of the Foot, cc, Second Bones of the Foot, dd, Second Bones of the Foot.

PART V.

THE HOG AND HIS DISEASES.

GENERAL REMARKS.

THE observations upon Anatomy and Physiology which are made on page 539 apply with sufficient precision to the hog to make unnecessary a separate treatise thereon. The varied food of this animal points to a similarity of functions as compared with those of man, and all practical hints for a work of this kind will be gleaned from what has been laid down in the several chapters of Part I. Before advancing to the treatment of diseases, however, notes are in order upon a few popular errors of practice in the care of swine.

In the first place, it is generally assumed that the hog is by nature prone to habits of filth. He is naturally disposed to wallow in water or other fluid elements, but will choose that which is clean if he has an opportunity. If he has not, he will take to what is afforded him, however filthy it be. It is only a disregard of his natural fondness for wallowing that leads him to take to offensive mire. A little observation will convince one that this animal is disposed to be cleanly. He will keep his sleeping-apartments clean and dry and will generally deposit the manure in a place apart from the bed, feed and drink. If one would have cleanly and healthy swine, the sty should be so arranged as to permit them to follow such promptings of their nature—a practice which is far from common.

In the second place, swine are not sufficiently protected from the weather. They are proverbial prognosticators of the weather, as shown by their preparation of beds before an approaching cold spell; and they are also sensitive to extremes of heat and cold. Their squealing in cold weather is more marked than the noise made by any other of the domestic animals in the winter; they will huddle together more closely to preserve warmth than others will; and they will with equal persistence seek damp and shady places in summer. These indicate that the hog is much more

sensitive than the majority of people suppose, if one may judge by the exposure to bitter cold and burning heat that is usually imposed. Such neglect contributes to discomfort and disease, and the exposure in winter is peculiarly unwise, in that it creates a great demand for food to merely maintain the temperature of the body, whereas the food should be used directly for flesh-forming purposes.

There is a widespread aversion to the use of pork because of the existence of trichinæ, and it is well to remark that much can be done to avoid this diseased condition by a proper regard to the pen and feed. Trichinæ are parasites in the flesh of the hog which are liberated in the human stomach by digestion, if infested pork is eaten without being long and thoroughly cooked. Rats and mice are peculiarly affected by these parasites and they will communicate them to the hog. It is a well-known fact that swine are prone to eat these animals, and that the latter will infest the pens to get the grain therein. It is obvious, therefore, that special pains should be taken in the construction of a piggery to wholly shut out rats and mice from all possible reach of swine. Besides, the offal of the hog, from the slaughter-house, butcher's shop and kitchen, should be scrupulously excluded from the feed, lest it be infested with trichinæ and so transmit them to healthy swine.

The last caution upon the feed may be carried further. It seems strange that, while hogs are kept solely as producers of food for the table, their owners so generally act upon the rule that any food is "good enough for a hog." This must be the outgrowth of the most complete thoughtlessness. To say nothing in detail upon the necessity of wholesome feeding to secure even acceptable pork, the writer will drop a remark upon the unwise use of milk and flesh-food. It is generally understood that milk is one of the choicest articles of food for swine, and it is if it is from a healthy cow. But what shall be said of the practice of carrying to the pigs the milk taken from diseased cows—because it is unfit for the family? That pigs are afflicted with anthrax, foot and mouth disease, and other malignant disorders, as a result of drinking the milk of cows suffering from the same, is well known. Again, carelessness is exhibited in allowing hogs to eat the flesh of cattle and other animals that have died from these diseases or been slaughtered because they were so affected, and sometimes such flesh is directly fed to them. In either case, they will become diseased and their flesh, when put on the table, will create more or less sickness in the household. Since the hog is not at all fastidious in his eating, it is all the more important that his owner guard the food, and particularly because his only direct use is the supplying of food for the human family.

The above points are mentioned because they are matters for every-

day thought, and a disregard of them leads to the discomfort and disease of the animals, to extravagance in keeping, and to sickness of the human family. With these brief notes we pass to the consideration of the diseases, naming those which are confined to the hog, with a few others not so limited but needing particular mention. A large proportion of the disorders from which swine suffer are common to other animals, and hence need no further treatment than can be found by reference to preceding pages.

ANTHRAX.—FOOT AND MOUTH DISEASE, ETC.

As remarked above, swine will contract various malignant diseases by eating the flesh of animals which have been affected with the same, and also very often by drinking the milk of diseased cows. In such cases, the swine will present the same symptoms as are shown by the animals which have thus imparted the disease, and the treatment laid down for the disease of the animal whose flesh or milk has been taken will be required for the affected swine. The fact that a hog has partaken of such diseased flesh or milk is a sufficient guide in determining upon the character of its ailment, and no detailed mention of causes or symptoms is needed at this point, since these are not distinctive diseases of swine.

CHOLERA.—BLUE DISEASE.

This is a very contagious and fatal fever, which begins with shivering, a dull, drooping manner and loss of appetite, followed by offensive and perhaps bloody diarrhœa, heat and redness of the surface, with blue, purplish, scarlet or black spots on the skin and mucous membranes. The animal lies on the belly and evinces pain. Vomiting of food or bile attends some cases, and a hard, dry cough is present in many instances. Other symptoms will be much thirst; quickened respiration and pulse; temperature 102° to 105° (detected by inserting a clinical thermometer in the rectum); thick fur on the tongue; hot, dry snout; unsteady gait behind, the surface of these parts then becoming cold; squealing when the belly is handled; after a time all control of the hind parts is lost, the animal becomes stupid (whereas it is sometimes delirious in earlier stages), and the muscles twitch or jerk. In rare instances there may be constipation from the beginning, instead of the diarrhœa. After a hog has been exposed to the malady the distinctive symptoms will not appear for three or four days in summer, or one to two weeks in winter. The disease generally proves fatal, death ensuing in from a few hours to five or six days. Occasionally an animal will pass through a slow and doubtful recovery.

TREATMENT.—Since recovery is rare and the disease is so prone to spread with great fatality, the only safe course is to kill and bury the infected animal at once. If treatment is undertaken, keep the piggery thoroughly infected with carbolic acid, and isolate the patient from the well. Feed well-boiled gruels of rye or barley, and boiled corn-starch. Put a little sulphuric acid into the drinking-water, the latter being cool, fresh and clean. Rhus, five drops every hour or two, is suitable for stages marked by the spots on the skin, diarrhœa, decline of spirits and strength, and threatened paralysis of the hind parts. Arsenicum, same dose as rhus, is a good general remedy, particularly for the diarrhœa, blue spots, cold surface, and vomiting. When the belly is very tender and the dung bloody, ten to fifteen drops of turpentine twice a day will be invaluable.

In the general care, *whether in treatment or prevention*, keep the apartments and bedding thoroughly clean and well-ventilated, dash cold water on the body, insure exercise, and give only good food, not too stimulating to the bowels for the well, and very simple for the sick. Test the temperature of all the hogs in the inclosure, and if it rises to or above 103° , treat or kill them at once. When one has been attacked, disinfect all others with dilute carbolic acid, and put a little of the same or a few drops of turpentine in the food or drink. Mix some charcoal in the food. Keep the well away from the inclosure, and from water that flows out of it. Bury or burn all infected animals as soon as they have died or been killed. Note the remarks under Strangles about confusing cholera with that disorder.

STRANGLES.—QUINSY.—FALSE CHOLERA.

The last of these three names is used because cases of strangles are frequently mistaken for cholera. Strangles, or so-called quinsy, is a result of colds, chills, or other influences which set up an inflammation of the mucous membranes of the respiratory organs. This may extend to the digestive track and induce a peculiar diarrhœa which, with the rapid fatality incident to both, leads to the confusion with real cholera. The glands beneath the neck are swollen, with a general swelling and stiffness of the neck; the head is immovable; the breathing is difficult, rattling and hoarse, or of a snoring nature; considerable fever is present; the tongue hangs out, and is covered with a slimy, sticky saliva; diarrhœa often occurs; there is a rapid decline of strength; the swelling on the neck tends to gangrene; death rapidly ensues.

TREATMENT.—In the beginning it will often be sufficient to afford warm, dry shelter, tepid or cool water and gruels. For dry and inflamed or swollen throat, with suffocating breathing, give six drops of belladonna in

a little water or meal every two or three hours. Ten drops of hepar every three hours will be useful for the symptoms just named, swelling of the head and face, and tendency in the swellings to "point" in suppuration. Give ten drops of mercurius every two or three hours when the swellings become soft and the saliva is profuse and offensive, or if the abscesses break internally. Sulphur is a good general remedy, and is peculiarly suitable to complete a cure that has begun. The greatest virtue is claimed for a mixture of equal parts of sweet oil, spirits of turpentine and kerosene oil, put into the feed and thus scattered over soft stone-coal. It may be used with great hope of good results, both as a remedy and a preventive. Pure air, warmth, freedom from cold draughts and sudden changes of temperature, warm but simple gruels, and tepid water are essential in the treatment, and are most serviceable in preventing the spread of the disease. This disorder is contagious, and the affected animals should be isolated at once.

SWINE-POX.

This is a contagious disease, being even communicable to man, and perhaps attacks young pigs most often. It is characterized by little red spots which are more particularly seen on the flanks, behind the shoulders, and in other parts where the skin is thin. After the poison enters the system it is latent ten or twelve days in winter, and three to six in summer. Then there will be dullness, loss of appetite, and stiffness of the hind parts, these being followed by increased temperature, constipation, red and watery eyes, nasal discharge, trembling, and red patches on the abdomen and inside the legs. Little red spots soon appear, generally flat on top, their centers becoming pale or clear, with a red margin. These spots may appear singly or in patches, the latter indicating a more serious condition. When these eruptions appear, the fever measurably declines for three or four days, only to return as the vesicles grow more prominent and irritating. The eruptions finally dry up and form crusts, the latter then becoming gradually detached. The disease lasts three to five weeks, and is sometimes very fatal, though generally the most of the patients recover.

TREATMENT.—Keep the pigs in a cool, dry, well-ventilated place, with an abundance of bedding, and avoid heating food, giving roots and gruels of the meal of oats or beans, with a little saltpetre once a day. Provide salt for the pigs to lick, and put a little vinegar in the drinking-water. In the latter stages, when there is much weakness, give such tonics as cinchona and gentian. Use upon the eruptions such local applications as are recommended for Cow-Pox. In other respects, follow the directions and cautions set forth under the head of Sheep-Pox.

LEPROSY.

By this is meant a disease which, though rare in America, is quite common in some countries of Europe, notably in England. Its essential manifestation is the development of whitish vesicles in any or all parts of the soft tissues of the body. It is most likely excited by a foul state of the sty and food, exposure to wet and cold, and other influences which seriously derange the digestive functions. Its progress is insidious, the organic changes being often far advanced before the disorder is noticed. The thighs, hams, jaws, shoulders, belly, in fact, all parts, contain the whitish vesicles; the animal is slow, drooping and weak; the skin thickens and shows ulcerous sores, with patches of hair coming off; the gait is unsteady, and the muscular control of the hind parts is sometimes entirely lost; the appetite may be seemingly normal; the breath is offensive, and the whole surface emits a more or less putrid odor; as the disease progresses, it will be marked by increased ulceration and swelling of the skin, with flakes coming off, shiny and offensive saliva, and other signs of putrefaction.

TREATMENT.—At whatever stage the disease be detected, it is best to kill the hog and bury it, because its flesh will scarcely be rendered fit for food with the best treatment, or with the most approved curing and cooking of the meat.

MEASLES.

This is of quite frequent occurrence among swine, though it is materially different in character from the disease in the human being to which the term is applied. It is essentially due to the presence of cysts in the muscles, in the tissues, in the eye, brain, and other parts, these cysts containing worms which are believed to be the undeveloped form of the tape-worm which infests the human body, and which enters the hog's stomach when it eats the human excrement of privies or drinks water running therefrom. It is claimed that the human stomach in turn receives the tape-worm when infested pork is eaten without being thoroughly cooked. These cysts can usually be seen if they are under the tongue or in the eye. If they are in the muscles and adjoining tissues, the animal will be in pain, and be stiff; if in the brain, there will be stupor or delirium, or both.

TREATMENT.—When the cysts have once become imbedded in the organic structures, treatment is unavailing. An avoidance of the influences which give rise to the disorder, including the deposits about privies—which are not safe as a fertilizer where the hog runs—is the best mode of prevention, and this is the only safe treatment.

NASAL CATARRH.—SNIFFLES.

This is quite common in the hog, and is generally the result of exposure to cold and wet in the first instance, though it is not unfrequently inherited. It is characterized by the nasal discharge which attends colds in other animals, and often by a discharge of blood from the nose; if the latter continues long, the snout is deformed and drawn to one side. Though a temporary improvement may be noticed at times, the strength will give way if the bloody discharges recur often, and the case will be fatal.

TREATMENT.—The disease usually advances so far before attention is paid to it that it will eventually be fatal in spite of treatment. Keep the animal in warm, dry quarters, and select the remedies mentioned for Catarrh in the Horse. One to three grains of sulphate of copper (blue vitriol) night and morning, in solution, may alone be enough, if it is long continued in connection with good care and food.

PNEUMONIA.—RISING OF THE LIGHTS.

Pneumonia, or inflammation of the lungs, is quite common among swine, and is very often fatal. It arises from exposure to damp and cold, bleak winds, and the like, and is prone to attack all the swine in the herd when it once appears—because all are equally exposed. The most prominent symptoms are loss of appetite, difficult breathing, heaving flanks, and an incessant and distressing cough. These should arouse suspicion when hogs have been unduly exposed, and treatment be resorted to at once.

TREATMENT.—Appropriate the remedies prescribed for Pneumonia in the Horse, and observe the notes on general care in the same article.

APOPLEXY.

The chief causes of apoplexy in man or beast being high-feeding and excess of fat, with inactivity, this disorder is of very frequent occurrence among swine, and it generally terminates in sudden death. Its approach is indicated by dullness and drooping, indisposition to move, staggering gait, wild eyes, absence of appetite, failure of sight, and general numbness. A partial recovery is often enjoyed, but repeated attacks will occur, and they often lead to brain fever.

TREATMENT.—Adopt the treatment mentioned for the Horse if any time is afforded. Apoplexy sometimes invades the piggery like an epidemic, and the exciting cause should be sought out and removed, increased exercise being especially needed in most cases.

BRAIN FEVER.—FRENZY.—MAD STAGGERS.

As elsewhere remarked, brain fever often results from repeated attacks of apoplexy; but it may also be caused by over-feeding, especially with new corn or other heating articles; excessive heat; hard driving; insufficient water. Though there is some difference between brain fever and mad staggers, they are so similar in symptoms and treatment that they may properly be thus grouped. The symptoms which indicate its approach are similar to the first ones of apoplexy; then inflammation sets in and the animal runs wildly to and fro, and dashes against any object in its way.

TREATMENT.—Adopt the treatment given for the Horse.

EPILEPSY.—FITS.

Epilepsy is quite rare in the hog, but far from unknown. It is ushered in by grunting, restlessness, quickened breathing and a staggering gait; then the animal suddenly falls and lies motionless a short time, after which convulsions come on, and increase in violence; the face is distorted, the neck curved, the legs alternately drawn to and extended from the belly very rapidly; the eyes protrude and turn about; the tongue is clenched between the teeth, the latter grinding together; the animal after a time regains consciousness, rises, timidly hides away for a few minutes, and then resumes his usual habits.

TREATMENT.—Nothing can be done during a paroxysm, but some results may be obtained in preventing a recurrence by insuring freedom from excitement, giving simple food, and keeping on the head cold applications, a cloth bound on the top being suitable. A pint of vinegar, two pints of water and one ounce of sal ammoniac make a good cold application. If one wishes to use internal remedies, they can be selected from those named for Epilepsy in the Horse.

LOCK-JAW AND HYDROPHOBIA.

These two disorders of the nervous system are thus grouped, not because they are similar, but because it is only necessary to say, first, that they are somewhat common among swine—lock-jaw occurring especially after castration, particularly if high feeding is practiced, and hydrophobia being peculiarly apt to affect the sty because a rabid animal has such easy access to it; second, it is but necessary to name their symptoms and refer elsewhere for treatment.

Lock-jaw is characterized by spasmodic movements of the head and

legs, grinding teeth, stiffness of the jaws, these being soon followed by stiffness in the neck and the greater part of the whole body, and a peculiar elevated position of the head. If the animal survives the twelfth or eighteenth hour, there are good grounds for expecting a recovery. For treatment, refer to Lock-Jaw in the Horse.

Hydrophobia arises from the bite of a rabid dog, fox or other animal, and is at first characterized by dullness and continual licking of the bite; then the symptoms are very similar to those of a rabid dog, and the reader is referred, for fuller notes and treatment, to Hydrophobia in the Dog.

COLIC AND INFLAMMATION OF THE BOWELS.

These two are mentioned together because one is easily mistaken for the other, though they are radically different, as shown by their symptoms. In *colic*, the animal is restless, utters cries of pain, and *rolls on the ground*; in *inflammation of the bowels*, the symptoms are dullness, loss of appetite, constipation, spasms, continued restless motion, staggering gait and other marks of pain.

TREATMENT.—Select remedies and local applications from those given for Colic and Inflammation of the Bowels in the Horse. For inflammation of the bowels, in particular, provide warm baths, dry bedding, and general comfort.

WORMS IN THE INTESTINES.

Worms very often exist in the intestines, are very troublesome, and not unfrequently exceedingly fatal. Their presence may be inferred if the animal has a voracious appetite and yet continues lean and out of condition in general, coughs, runs restlessly about, utters cries of pain, snaps at other hogs or whatever animals are in reach. The dung is usually hard and high-colored, though diarrhœa is not uncommon; the urine sometimes whitish; the eyes sunken; weakness becomes more marked and is attended with symptoms similar to those in Colic; staggering and convulsions sometimes ensue.

TREATMENT.—Turpentine, a few drops to the dose, is very efficacious, and does not injure swine if given in proper quantities. Common salt, which is poisonous to hogs when given in large quantities in the food, is an excellent remedy when supplied in such a way that it can be licked at will. Cina and santonine are standard remedies in the treatment for worms. Tansy is also valuable. For tape-worm, put the hog on a fast, and then give *felix mas* or root of male shield-fern; *areca nut* is only second to this,

being especially suitable for weak animals. Provide clean quarters and wholesome food, and observe care in promoting a healthy condition of the stomach and bowels. Note the remarks on tape-worm under Measles.

DISORDERS FOLLOWING CASTRATION AND SPAYING.

It is useless in a work of this kind to give directions upon the various methods of performing these operations. They are matters of practice, to be learned by witnessing the operation. It may be said that boar-pigs should be castrated after the tenth day and before the third month is passed. The best age for operating on a sow-pig is perhaps six weeks. One should seek to have the pigs in good health at the time, and so far as possible choose weather that is neither very warm nor very cold, and preferably not wet. After the operation, it is well to confine the animals for a few days to keep them from getting into water and mud before the sore has healed. Provide good shelter, with plenty of clean bedding. Sour milk or whey and barley-meal make a good feed. High feeding after the operation is very unwise and dangerous. It is not unfrequently the case that the animal, some time after the operation, evinces signs of lock-jaw (spasmodic motion of the head and of one or more legs, grinding of the teeth and stiffness of the jaws), and then the treatment for Lock-Jaw is to be adopted.

GENERAL MENTION OF DISORDERS.

As remarked on a preceding page, the hog is subject to many disorders which are common to the horse, ox and sheep, and hence do not need separate treatment. Among them we mention Paralysis, a partial or complete loss of some of the members, as a leg; Diarrhœa, a simple looseness of the bowels as a result of improper food, a cold, or some constitutional disease; Dysentery, or Bloody Flux, which is an inflammation or ulceration of the membranes of the intestines, attended with blood discharges, much pain, and rapid prostration; Stone in the Bladder; Inversion of the Bladder; Inflammation and Enlargement of the Spleen; Protrusion of the Rectum; Erysipelas; Lice; Mange or Itch; Ruptures; Injuries in general. The most of these are readily recognized, and the reader will find their causes, symptoms and treatment sufficiently considered by reference to the articles upon the same disorders in the Horse.

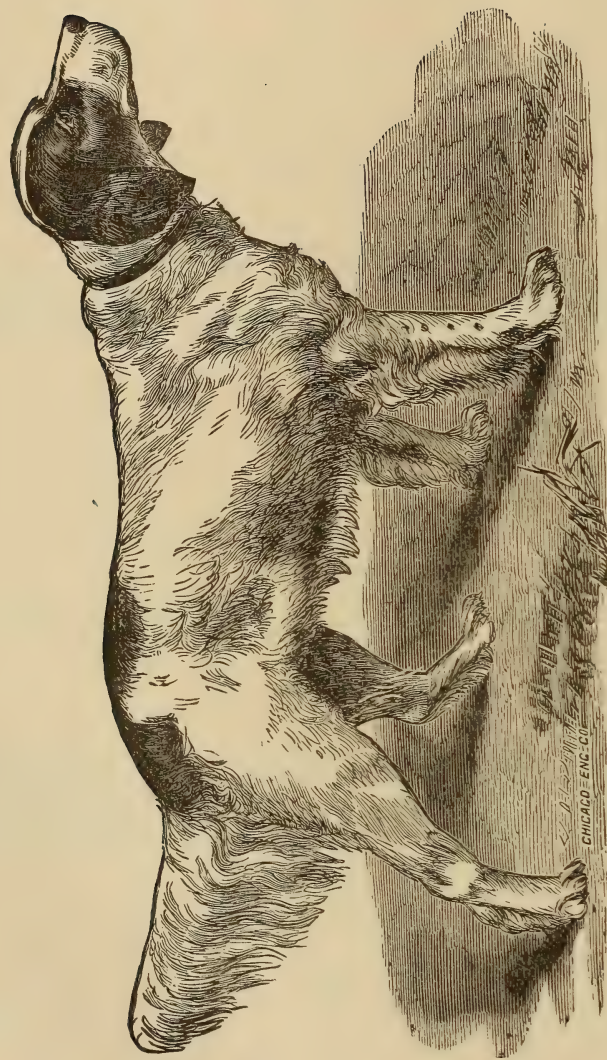
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PART VI.

THE DOG AND HIS DISEASES.





202. CHAMPION ROB ROY (1417). Owned by Arnold Burges.

PART VI.

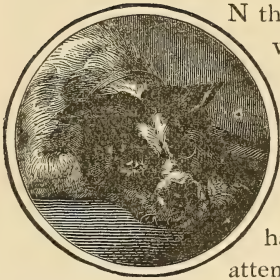
THE DOG AND HIS DISEASES.

INTRODUCTION.

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ORIGIN AND TRAITS.



IN the origin of the dog scientific men have differed widely. By some he has been declared a descendant of the wolf, and by others of the fox or jackal, and points of resemblance, such as cranial development, period of gestation, peculiarity of the eyes or carriage of the tail, have been cited in support of each theory. Still other writers have claimed he is of a distinct breed, and have attempted to prove this by the assertion that, though he will breed with all of the above animals, the progeny of the cross are incapable of propagation *inter se*, thus proving they are true hybrids, or descendants of distinct species, it being a well-established principle that hybrids are sterile if bred together. This theory has, however, been completely refuted by observation of the dogs of the Indian tribes, as it has been proved beyond question that these cohabit with the wolves, foxes and coyotes, and that the progeny of these unions are as fertile as any others. From this fact modern authorities have come to the conclusion that the dog is a mongrel, descended from crosses between all the animals to which he bears resemblance, and raised to his present perfection by selection and breeding for specific results. Animals in a state of nature vary but little if any from the original types, because they are

not subjected to any influences that would induce change. They dwell together according to their kind, often in packs or herds, and inbred to a degree that would be ruinous but for the wise provision of nature which, through their ferocity and the law of force, secures the survival of the fittest, and these, from the prepotency of past consanguineous unions and the unvarying character of life generation after generation, naturally reproduce the typical characteristics of the race. Domestication has changed other animals as radically as it has the dog. Climatic influences and the demand for new and different services, tending to induce breeders to develop classes capable of meeting these demands, are sufficient to account for even the variations in size and instinctive qualities which the dog of to-day displays. Upon any other theory it would be difficult to trace to a common ancestor such different types as the mastiff, weighing nearly two hundred pounds, and the toy-terrier, weighing only a few ounces; the setter, pointer, spaniel and hound, each instinctively taking to the pursuit of game, but each in different form from the others; the bull-dog, with his brutal instincts, and the Newfoundland, with his amiable character and half-human intelligence. But when we remember that the most exaggerated specimens have been evolved from less-contrasting ancestors within the few years that fashion or special need has made them objects of desire, we can more easily regard them as absolute productions, and comprehend the effects of circumstances and influences extending back to the early ages of the world.

The dog is, of all animals, essentially the friend and companion of man. From the earliest times of which we have any record we find him a dweller in the tent of his master, the playfellow of his children, his assistant in the chase, his guard at night, at all times a servant "faithful even unto death." The most ancient pictures and the sculpture of exhumed cities unite with poets and painters of modern times to commend his courage and devotion, and make the dog a synonym of constancy and zeal. Other animals share his servitude, and some may by circumstances or the peculiarities of their owners be admitted to companionship in a greater or less degree. The wild tribes of the desert necessarily depend upon their horses for both subsistence and safety in danger, and the love of an Arab for his horse, with the intelligence the latter acquires from the association, is well known to all who have read the history of the nomadic races. The cat is the favorite with some, but the cruelty and the treachery of his disposition unfit him for the general trust and affection given to the nobler dog. Individual fancies occasionally induce the admission of other animals into similar relations, but of all the brutes the dog alone is the ordinary associate of man, and a reasonable study of his habits and disposition will convince one that he is justly entitled to the distinction.

DIVISION OF BREEDS.

Custom has divided the dogs of the English-speaking countries into "sporting and non-sporting classes." The former comprehends all that are used with the gun, hounds, fox-terriers and dachshunde; the latter, watch-dogs, sheep or cattle dogs, terriers generally, toy dogs, and those which may be classed under the general term "miscellaneous." "Stonehenge," who is recognized as one of the best authorities, divides these sub-classes as follows: The dogs used with the gun are setters, pointers, spaniels and retrievers. The hounds comprise the greyhound which hunts by sight, the bloodhound, foxhound, harrier, beagle and otter hound, all of which follow their game by scent. Fox-terriers are divided into the rough and smooth varieties, and the dachshund is identical with the German badger dog. Watch-dogs include the mastiff; bulldog; Newfoundland; Labrador and lesser Newfoundland; the St. Bernard and the Dalmatian or coach dog. The last Youatt says is "used in his native country for the chase," and Stonehenge says "without doubt the Dalmatian is a pointer when at home," but owing to the difference in his uses in his native country and elsewhere, Stonehenge adds, he "has always been included in our shows among the dogs not used in field sports, and for this reason I have classed him among the watch-dogs." The sheep and cattle dogs are the colly, the bob-tailed sheep dog, and the Pomeranian or Spitz which Stonehenge asserts is in his native country "employed as a sheep dog." Terriers are classed as rough and smooth, though there are also many which are properly described as nondescript, because, while possessing some of the attributes of certain breeds, they also differ too widely from the best types to be entered with them. The rough terriers are the Skye, both drop and prick eared; the Dandie Dinmont; the Bedlington; the Yorkshire and the Irish. The smooth varieties are the black and tan, or Manchester, the white English and the bull-terrier. The toy dogs, also divided into the rough and smooth, are first, the King Charles and Blenheim spaniels, the Maltese dog and the rough toy-terrier; second, the pug, the Italian greyhound and the smooth toy-terrier. In an appendix Stonehenge mentions the poodles, both French and Russian; the truffle dog; the Chinese crested dog and the Great Dane, these not being properly dogs of the British Isles.

USES OF THE DOG.

Field sports have existed in Great Britain from the earliest times. They have always been the prerogative of the aristocracy and wealthy class and have been protected by severe forest and game laws. Of old the keeping

of certain breeds of hounds was limited by royal edict to those of royal blood and others who enjoyed the privilege by special grant from the crown. Dogs which were permitted to persons of lower degree were also the subjects of special legislation, and if caught in the forests were mutilated by the keepers by having some of their toes struck off to prevent them from running the king's deer. As the more liberal spirit of modern times abolished the feudal laws, dogs in all varieties became the property of all who chose to breed or keep them, but their employment in field sports is still possible only to those who own or rent shootings, as the right to game has not yet been made a popular one. There has been a great outcry of late over the restriction of game to the wealthy class, and doubtless this is in some respects a hardship, but it is also certain that, if thrown open to the public, field sports in Great Britain will soon become a thing of the past, since, from the demands of agriculture and the density of the population, game can only be kept up by artificial propagation and protection, entailing a heavy expense which wealthy men will not undertake when the sole right to the game is taken from them, and which the public cannot afford. Even as things are now, the use of pointers and setters has been almost discontinued over a large portion of England, as high farming has stripped the land of most of its cover for game, and the birds, from being constantly disturbed, have become so wild they will not lie to point. The moors of Scotland and Wales afford the best opportunities for shooting over pointers and setters, though on some of the large estates in England they are still used for partridges.

Foreign pointers and setters are not allowed to retrieve, which necessitates the employment of a special breed for this purpose. At English shows there are classes for black and other than black retrievers. The former are the better liked for general work, and are divided into wavy and curly coated. Both are descended from the Labrador or lesser Newfoundland, either pure or cross-bred to the setter. Stonehenge says, "in the belief that the nose of the pure Labrador is inferior to that of the setter, I certainly should advise the cross-bred dog for use; but to be successful upon the show bench, the competitor should display as little as possible of the setter." Size, to give them strength, is an essential in these dogs. Two noted prize winners were Mr. Gorse's Wyndham, wavy coated, and Jet, curly coated. They weighed eighty-five and seventy pounds respectively. The class for other than black includes the liver-colored dog sometimes found in litters from black parents, the color indicating spaniel-cross. All these dogs, as well as the Irish water spaniel, are used for wild-fowl retrieving, and in Scotland, for trailing up wounded deer, the colly, pure or cross-bred, divides public favor with the deerhound.

Spaniels are extensively bred in several different varieties, the chief being the Clumber, bred at the seat of the Duke of Newcastle in Nottinghamshire, the Sussex, Cocker, and the English and Irish water spaniel; the water spaniels being used as retrievers, and the others for cover work on cock and pheasants, where beaters are not employed.

The chase is a more general pursuit, being open to those who do not own or rent land but can afford horses and the other expenses incident to the sport. The fox, hare and stag are hunted on horseback, while beagles and otter hounds are followed on foot. In speaking of hounds, sporting law limits the name to bloodhounds, staghounds, foxhounds, harriers, beagles and otter hounds. Greyhounds are not included in the class because they run their game only by sight and are used for coursing. The deerhound is not included because he is only used to find or retrieve wounded deer. Bloodhounds and staghounds are used for the stag, foxhounds for the fox, and harriers for the hare. Beagles are also used for hunting the hare, rabbits, or a drag, and otter hounds for the otter by the sides of the water-courses. Fox hunting is the national sport of England, and the number of packs kept is very large. A pack properly consists of twenty-five couples, but few are as large as this. They are kept up by subscription among the "members of the hunt," that is, those who habitually hunt with each pack. The pack is kept by one member, known as the "M. F. H.," or master of foxhounds, who appoints the "meets," and hunts the pack with the assistance of a huntsman and helpers known as whips. The huntsman has charge of the hounds in kennel, and when going to and returning from a hunt.

Packs of staghounds are comparatively rare, as the stags are park-raised, and consequently less plentiful than foxes. One is known as Her Majesty's Pack, and a few others are kept up in different portions of England. Stonehenge says, "except in Devonshire and Somerset, the staghound is not allowed to kill his quarry, being whipped off as soon as the deer stands at bay."

The harrier now differs from the foxhound but little in size and appearance, being, in fact, largely inbred to the latter dog. Of the harrier Stonehenge says, "breeders still take special care to have a combination of intelligence and high scenting power, sufficient to meet the wiles of the hare, which are much more varied than those of the fox." He also mentions the pack of Sir Vincent Corbett as being the most beautiful he has ever seen, and claimed to be purely bred.

Beagles afford great sport to those who like strong exercise on foot. The taste for this style of hunting is on the increase, and the packs consequently increasing in numbers. Stonehenge says, "foot beagles should not

much exceed nine inches in height; but for 'young England' they are now often used up to eleven or even twelve inches, going a pace which requires a good runner in prime condition to keep up with them." He also mentions the most celebrated pack in England as follows: "A diminutive pack of rabbit beagles, the property of Mr. Crane, of Southover House, near Bere Regis, Dorset, contains the best patterns we have ever known. Mr. Crane's standard is nine inches, and every little hound is absolutely perfect." This standard is kept up with great difficulty, owing to the inability of the dams to raise their whelps, and also to many deaths from distemper. Beagles were great favorites during the reign of Queen Elizabeth, and were bred as small as possible. "A pack of the Virgin Queen's (*it is said*) could be carried in a man's glove." Stonehenge speaks very strongly of the benefit to be derived from beagle packs as training for fox hunting, and says: "We believe we are correct in stating that ten or more of the most celebrated masters of the day learnt their first lessons with the merry beagles."

Otter hunting is followed during the summer, when most other sports of the field are out of season. Though popular, it is not extensively practised, as otters are very destructive to fish, and so are destroyed whenever possible when frequenting noted fishing streams. In Cumberland and Devonshire there are many streams in which the fish are too small to afford much sport and here otter hunting is pursued with relish. There are also packs kept up by subscription at Carlisle and Northumberland, and several private packs in Wales. As in this sport there is a great amount of water work, it is essential that otter hounds shall have a rough, long coat, with an inner coat of thick, close wool, a point always regarded in breeding. They must also have very keen noses and deep, rich voices.

To mention all classes of dogs as fully as I have spoken of those kept for sport would require more space than can be given to this article. I shall therefore pass the others over with very brief remarks and take up the matter of the breeds most used or kept in America.

In the watch-dog class, the most prominent in point of size is the mastiff, which often weighs from one hundred and sixty to one hundred and eighty pounds, yet the gentleness of his disposition renders him a fit companion for children and ladies; in fact, some of the noted prize winners are owned by ladies, who take as much pride in their huge pets as others do in their toy terriers or delicate Italian greyhounds.

The Newfoundland, to suit popular taste, must be black, though Sir Edward Landseer brought the black and whites into prominence through his paintings. The latter are not deemed purely bred, and are often excluded from the regular classes and classed by themselves as "Landseers."

The St. Bernard has been imported to England, and is now very purely bred in both the smooth and rough varieties, though not such a general favorite as the mastiff or Newfoundland.

The colly is probably more intelligent and highly educated than any other dog. By constant association with his master and daily participation in his labors he develops an amount of special knowledge and general intelligence almost inconceivable. No other dog is so intimately connected with his master's daily life, and without his aid sheep-tending upon the moors would be practically impossible. The well authenticated reports of the duties performed by collies read like romances, and certainly show in the strongest possible light the elevating influence which association with man exerts upon the brute creation.

The terriers and toys are practically pets and house dogs. Many of them are highly intelligent, sharp and useful in their stations, while others simply serve to gratify their master's fancy.

DOGS IN AMERICA.

In this country field sports are matters of comparatively recent date. Only a few years since a gentleman could not indulge in such pursuits without loss of business and social standing; but with the increase of wealth and consequently greater leisure, the love for sport natural to the Anglo-Saxon race has asserted itself, and proficiency in the field is now deemed a gentlemanly accomplishment. There is no country under the sun which affords more varied or better natural sporting facilities than our own. With an immense territorial area, crossed in every direction by railroads, with every variety of surface, from semi-wooded to prairie, mountain and forest, game of all kinds, from the snipe, woodcock, quail and grouse, to the deer, elk, buffalo and bear, are at the command of all who care to seek them. State associations and local sporting clubs foster the love for the field, and the desire for dogs worthy of such a country has led to the importation of the best specimens, and to competition in public at shows and trials. A few years since our dogs were, as a class, far inferior to those of England, owing to the greater care gentlemen there had taken to keep up their strains. The last decade, however, has seen a revolution wrought in kennel matters, and we can confidently expect to have in the near future as fine dogs as any in the world.

There are reasons why field sports will never be carried to the extent they are practiced abroad, and for the scant foothold which some of them will gain in popular favor. In the first place, they are here open to all, and as rich men are everywhere the exception, it follows that comparatively

few Americans can afford the costly appointments necessary for such development as these sports have attained to with the wealthy class of the mother country. Then, too, our trespass laws and the rights of land owners will prove an insurmountable obstacle to fox hunting proper. No man will stand the rush of a pack over his fields and the trampling of his crops and breaking of fences by horsemen. In England the hunt is supported by the class that owns the land, those who farm it being tenants. It is, too, a time-honored institution which all have been taught to regard with pride as a national sport. Here nothing of the kind exists; we have no class distinctions, and the man who owns a single acre is as strongly defended by the law as his wealthy neighbor who owns a thousand. It will therefore be practically impossible ever to gain popular consent to the establishment of a sport which so large a portion of the community will deem prejudicial to its interests; and even if in certain localities of the Eastern States hunting is followed by a few clubs, it will never become widely spread or generally popular.

The natural sequence of such limitation in sport is that certain varieties of dogs are either not at all or but little used in this country. We have but very few retrievers, because a majority of our sportsmen keep but one dog and break that one to retrieve as well as point. On certain parts of the coast, and by the great rivers and lakes, men who make a practice of wild-fowl shooting keep dogs for retrieving, as water work when the weather is cold is very hard on ordinary field dogs, whose coats are not suited for it; but through a great portion of the West even this shooting is had under circumstances that admit of the use of field dogs.

The hound class is also a small one, and made up of few varieties. Foxhounds are broken to follow all kinds of furred game, according to the section in which such dogs are kept. Deer, foxes, and the hare, commonly called rabbit, are all killed before dogs of the same breed, and consequently there is no demand for those used abroad for each variety of sport. Beagles have been brought out of late, and our shows call together some fine specimens. They are however little used in the field, nor will they probably be so long as the larger hound is so generally useful.

The greater part of our sporting is done over setters and pointers. These are now bred from the best strains obtainable from crack English kennels, and single dogs costing \$1,000 or upward have been imported by both clubs and private individuals. The setter is best adapted to general sporting, as his coat and spaniel-origin fit him for work which the pointer is comparatively ill-suited for. There are three great divisions of the setter family, viz.: The English, Irish, and Gordon, each differing materially from the others, and each with its warm friends and supporters among sportsmen.

The pointers have no such natural division, but, though of one general race, they are divided into different classes according to size in show classification. Certain families, too, have their own colors, or rather colors to which the representatives of those strains closely conform, and which therefore serve as family marks. From his thin coat and indifference to heat the pointer is specially suited for work on dry prairies, or in the extreme Southern States. His advocates proclaim him the equal of the setter in all ways and places, but this is not the general opinion, and he is consequently not as common as his long-haired rival. Field spaniels are used by a few sportsmen who like their style of work in cover, but taking the country through, these dogs might be included in the non-sporting classes without seriously affecting our sporting interests.

The non-sporting classes are always well represented in shows, and are growing in favor daily. Within a few years most varieties of terriers and toy dogs have been introduced into the country, and good specimens of the mastiff and Newfoundland are becoming quite common. Sheep dogs are deservedly coming into favor, and will soon be largely bred for use on farms and cattle ranches. Trials similar to those abroad have recently been instituted, and the colly will become an important factor of our canine population.

DISEASES AND CARE OF DOGS.

Domestication, by inducing an artificial life, has naturally had in some ways a bad effect upon all animals subjected to it. The dog in a state of nature has probably but few ills apart from those consequent upon old age; but when domesticated, and especially when finely bred, he suffers from many diseases similar to those of man, and requiring similar treatment. When dogs were worth but a few dollars there was nothing to induce scientific men to study their ills, but with their present values, and especially with the interest awakened in them by the love for the field, which is shared as well by medical men as by others, the attention of the faculty has been called to the treatment of canine diseases, and they are fast approaching the point when they will be as well understood as those of any other class of patients.

Dogs need comfortable quarters, good food, combining meat, vegetables and breadstuffs in due proportion, and also plenty of exercise. The latter is more generally neglected than the former, and to such neglect is due most of the ills from which dogs suffer. Properly attended to, dogs cost but little trouble, and repay this a thousand-fold.

DISEASES AND THEIR TREATMENT.*

HYDROPHOBIA.—RABIES.—MADNESS.

This fearful malady is liable to occur in any dog, and is therefore a source of dread to many people when near one of the species. It results from a specific virus which passes into the system by infection, whether by a bite or by any other means of introduction through a break in the skin or mucous membrane. The most playful bite of an affected animal has the same effect as a malicious one. It affects either sex, not the male only, as has been supposed. It is more prevalent in winter and the damp cold weather of spring, and is not, *in any sense*, peculiar to "dog days" and other hot weather, as is popularly believed.

Symptoms.—The wound from the bite rapidly heals, usually without inflammation. During a period thereafter, varying from three weeks to eight months, though usually not more than six weeks, no symptoms are noticeable. The disease, after this period, will develop in one of two forms, the *violent* or the *sullen*, a distinction too often unobserved. In the *violent* form, after the weeks of incubation, the animal is sullen for a few hours, or even three or four days; then is irritable or violently mad for three or four days, and in the third stage becomes more calm, weaker, and dies after being in this stage a few days. In the *sullen* form, the dog passes through the first and third of the stages just indicated, the violent period being absent or being much less marked by excitement, motion and biting. The absence of this violence should not be considered proof that hydrophobia does not exist. Mr. Youatt, who is widely quoted as the highest authority on this malady in dogs, has epitomized the detailed symptoms in the two forms substantially as follows:

1. In the *violent* form, after the period of sullenness, which lasts a few hours, possibly days, there are increased sensitiveness and muscular activity, a disposition to bite, and a *continued peculiarity in the bark*, the last being a very noticeable indication. The animal becomes changed in habits and disposition, licks or carries stones, sticks, and like substances, is restless and snaps in the air, though still obedient and kind to his master. Soon the appetite is disgustingly depraved, so that the urine and excrement from the bowels are eaten, or there is a loss of appetite and thirst; swelling of the tongue and mouth; redness, dullness, and half-closing of the eyes; wrinkling of the skin on the forehead; roughness and staring of the hair; unsteadiness and staggering in the gait; periodic biting, snapping immediately after ap-

* Read the remarks on "Anatomy and Physiology" page 539.

pearing quiet and kind. In the latter stages, paralysis takes place in the limbs; spasms affect breathing and swallowing; the external surface becomes irritable, and sensitiveness is increased; convulsions may come on. These symptoms come and go, with periods of comparative health between them, and are often excited by touch, sight or hearing, especially by seeing or hearing another dog.

2. The *sullen* form is marked by shyness and depression, with no inclination to bite, and no dread of fluids. The dog is unnaturally quiet, depressed in spirits, haggard and suspicious, refusing food and seeking close retirement. The breathing is hard; the bark rough, harsh and changed in tone; the lower jaw drops down, the tongue hangs out and saliva constantly flows, the dog perhaps seeming to try to paw it off the lips; the breathing grows more labored; there are trembling, vomiting and convulsions.

It should be noticed that, not only are the violent symptoms absent in some cases, or much reduced, but there is not the inevitable repulsion to water which is almost universally supposed to exist, and which gave rise to the name *hydrophobia*, that is, "dread of water." That the animal may be thrown into violent spasms at the sight of water, after swallowing has become difficult or impossible, is undoubtedly true in many cases, but not always. When it is the case, it is a result of involuntary muscular action, and not of a conscious dread of the water; for thirst may be pronounced in this disease. It has even been reported that, in the fever-stage, a mad dog has been known to plunge his head into water, as if to cool himself. Hence, the test of placing water before a dog suspected of infection is not reliable. Besides, if the sight of water does produce spasms, it is only in the more violent stages, when other symptoms are quite as marked. Again, the frothing at the mouth is not so frequent as is supposed, indeed, not as certain to occur as in epilepsy, or when the jaw is paralyzed. The tail carried between the legs is a symptom not so significant as most people suppose, for it is quite as often elevated.

TREATMENT.—To prevent the development of the disease, as soon as the bite has been inflicted thrust down into it some small iron or other metal raised to a red (better white) heat, not merely a black heat, until a thorough searing of the flesh all around the wound has been effected. A point of lunar caustic (nitrate of silver) may be used for such cauterization, but is not so good as the iron. If neither is at hand, grasp the wound with the fingers and forcibly squeeze it so as to drive the blood from the bottom, carefully avoiding contact of the blood with any break in the skin, repeating a few times to remove all the poison if possible. It is always best to apply a ligature close to the bite, on the side toward the heart. If the bite has not been cauterized, wash it at once with cold water, putting in a few

drops of belladonna if it is at hand, and cauterize it as soon as practicable. After cauterization, keep on compresses of water and belladonna until the wound is thoroughly healed, and give a drop of belladonna internally every day or alternate day for six weeks.

If a dog only suspected of being bitten by a mad animal has bitten any person or beast, keep him confined until the full period of development of the disease has passed (even up to eight months), so that all doubt as to whether the person or beast has been infected may be removed, meanwhile giving the patient belladonna internally as directed above. Otherwise, a suspected dog should be killed, unless he has a special value. Any vicious, snapping cur, as being specially liable to madness, should be killed. Of course, a dog known to be mad will be immediately killed. If any person has been bitten by an infected or suspected dog, see *Hydrophobia in Man*.

DISTEMPER.

Distemper seems almost like an inborn disease with most dogs, and more frequently develops in superior breeds. It is most common in pups, which are also more apt to recover. It comes on more often in the spring and autumn, in the latter of these more often than in the former. If it results from a natural predisposition, those animals are more susceptible to its development which are kept housed; those also which have flesh-food, are more liable to it than those not having it. The primary symptoms, which usually escape notice at first, are general dullness; failing appetite and flesh; short cough and vomiting; impatience at being disturbed; watery eyes, pained by light. Later, the animal shivers fitfully; persistently seeks a hiding-place; has a more rapid pulse; matter accumulates on the eyelids and finally glues them together, and a yellowish mucus obstructs the nostrils; cough grows more frequent, with very offensive vomiting; increased shivering; rapid wasting of the body; hot skin; warm paws; standing, dull coat. In about a week apparent improvement sets in. A renewal of the disease will very probably occur, with aggravated symptoms, such as weakness in the hind legs, the dog after some days dragging himself along, though not often when older than one year. In this condition there may be another apparent improvement, but a relapse is pretty certain, with intensified force. If the eyes are still blood-shot, and the flesh continues reduced, there is danger yet. In fatal cases, death generally occurs the third or fourth week, six weeks being the common duration of other attacks.

TREATMENT.—*Nux vomica* alone has cured many cases, if given in the first stage, as it always should be, when there is loss of appetite, with

watery discharge from the nose, cough, vomiting, and constipation. Give belladonna if the eyes are inflamed, watery and sensitive to light, and for dry nose, twitching of muscles, the animal trying to hide and starting when asleep. Arsenicum is needed for loss of strength, flesh and appetite, thick, offensive, perhaps bloody nasal discharge, and for diarrhœa. Phosphorus is invaluable for quick breathing, offensive sticky discharge in the eyes, painful cough; bloody froth in the mouth, and paralysis of any parts. Give sulphur for symptoms which return after an apparent recovery, and sustain the strength with tonics, as gentian, quinine and Fowler's Solution. In the way of diet, which is always of the first importance, give cold milk, rice, coarse bread, and an abundance of cold, fresh water. Avoid animal food, grease, sugar and dainties. Observe absolute cleanliness. Keep the bed away from the fire, but let it be warm and airy, the bedding being hay or straw, changed every day, and always being dry.

APOPLEXY.

Apoplexy is a sudden partial or complete loss of consciousness and power of motion, and may attack any dog, though pet dogs, if kept fat, are peculiarly subject to it. It is caused by pressure on the brain from abnormal flooding of the blood-vessels. At first there may be drowsiness, a staggering walk, and twitching of some muscles; but the attack may be sudden, the dog falling quickly, immovable and apparently dying, though he generally revives in a few hours.

TREATMENT.—The treatment will be found under Apoplexy in the Horse. Rich and over-abundant food and luxurious housing tend to an excess and impurity of the blood most favorable to apoplexy. A simpler habit of life is highly important.

PARALYSIS.

Paralysis is a loss of power and feeling in certain muscles, and is caused by injury, diseased brain, sexual excess, rheumatism, distemper, mange, or inflammation of the bowels. Though it may affect any of the muscles, or even the whole body, it usually attacks the hind legs, the dog dragging them while he walks with the fore legs.

TREATMENT.—Give *nux vomica* if the cause is not known, or if there be constipation and vomiting. When paralysis follows unusual exertion, exposure to wet, rheumatism or mange, give *rhus*. Insure perfect quiet and good food. Rubbing the paralyzed parts with the hand is beneficial. If the case is bad and persistent, kill the dog.

EPILEPSY.

Epilepsy is a sudden and violent spasm of the muscles, lasting ten minutes or more. It is usually hereditary, though it may result from an injury to the head, disorders in teething, eating too much raw flesh, and worms in the bowels.

In an attack the animal suddenly staggers and falls, often with a distressing bark; violently struggles; foams at the mouth, perhaps with blood flowing from bites on the tongue; the legs generally grow stiff; the eyes roll wildly; the face twitches. Consciousness gradually returns, and the dog seems perfectly well until another attack comes on.

TREATMENT.—Use the remedies prescribed for Epilepsy in the Horse. All food given to a dog subject to epilepsy should be cooked. During an attack, keep a stick between the jaws to prevent biting of the tongue.

CANKER IN THE MOUTH.

This is a very troublesome disorder, and if the disease result from long-continued irritation, or be in an old dog, it is deemed incurable. Its symptoms are swollen gums, discharging blood; offensive matter; proud flesh; bleeding; difficulty in eating; loss of appetite, flesh and strength.

TREATMENT.—In recent cases, or in young dogs of general good health, wash out the mouth once daily for several days with a solution of two grains of nitrate of silver to four ounces of water, using a tooth-brush in the application. Hydrastis, internally and externally, may be good.

SALIVATION.—SLOBBERS.

An overdose of mercury, or the use of mercurial ointments for skin disorders, sometimes produces salivation, of which the symptoms are swollen gums and lips, loose teeth, swollen and red tongue, profuse and constant flow of saliva from the mouth, very offensive breath, easy falling of hair, diarrhoea and straining.

TREATMENT.—Give two drops of nitric acid three times a day. Wash the mouth out with warm water and honey. Keep the dog in a warm, dry place, with clothing if necessary to comfort, and feed him well.

INDIGESTION.

Indigestion may result from overfeeding, improper food, want of exercise or reduced vitality. Its symptoms are restlessness; reduced appetite;

frequently attempted vomiting, generally with little thrown out, and that being frothy and green fluid; foul breath; irregular action of the bowels; distended belly, poor or depraved appetite; rolling on the ground.

TREATMENT.—Give *nux vomica* for vomiting of frothy, green fluid; constipation; drowsiness; useful also for pet dogs. *Pulsatilla* is valuable for cases resulting from rich food; flatulence; especially for delicate, high-bred dogs with a tendency to diarrhœa. Insure regular exercise, and wholesome, digestible food in only moderate quantities.

VOMITING.

Vomiting is such an easy matter for a dog that it not only occurs as a frequent symptom of some disease, but even when food disagrees only a little with the animal. In the slight troubles last named, it needs no attention unless it be often repeated.

TREATMENT.—If vomiting occurs daily for some time, change the food. If it then persists, use remedies. *Creosote* is needed for continual vomiting, unsuccessful attempts at vomiting, and vomiting while in pup. *Cocculus* is needed for nausea after eating, and small quantities thrown out; and *ipêcac* for throwing out all the meal soon after eating, as well as for diarrhœa or dysentery. Provide good food and outdoor exercise.

INFLAMMATION OF THE STOMACH.—GASTRITIS.

This is caused by damp lodgings, drinking cold water when heated, rich food, indigestion, and poisons. The dog evinces great pain; throws himself down, rolls and kicks; lies on any cold surface; constantly craves water, but throws it up as soon as it is swallowed; retching; cold extremities; dry, hot nose; quick breathing; anxious countenance.

TREATMENT.—Give no food or drink but cold water, until all symptoms disappear; then, for several days, only cold milk, oatmeal-gruel, and the like. Choose remedies from those given for Gastritis in the Horse. If poisons are the cause, they are to be removed and antidotes given as directed under Gastritis in the Horse, and in the Index of Poisons.

INFLAMMATION OF THE BOWELS.—ENTERITIS.

This painful disorder results from drinking cold water when the dog is heated, sudden changes to cold or damp weather, damp, shady lodgings, too constant use of animal food, colic, constipation, foreign bodies in the bowels, and the like. The symptoms are very active, such as hot, very

tender abdomen; constant violent pain, sometimes causing the dog to throw himself violently down, howl, spring up, walk about, and again throw himself; these violent actions continue until relief is given, or, in fatal cases, subside just before death. There is no appetite, but constant thirst, and constipation followed by loose, bloody evacuations.

TREATMENT.—Apply fomentations of hot water to the abdomen until the symptoms abate. Allow the dog to lap cold water. After the severe symptoms subside, give milk and broth, but no solid food until recovery is established. The remedies are named under Enteritis in the Horse.

DYSENTERY.

Dysentery is caused by exposure to cold, bad food, damp lodgings, worms, stagnant water for the drink. The symptoms are shivering at first; hot skin; quick, small pulse; short, hurried breathing; vomiting; the dog turns his head to his flanks, the body being tucked up and the loins arched; afterward, loose bowels, with almost constant straining to empty them, resulting in watery evacuations containing blood and lumps.

TREATMENT.—Give mercurius corrosivus if the evacuations are bloody, with great straining before and after them. Arsenicum is needed for constant thirst, great weakness, with trembling of the limbs when lying down, and very offensive evacuations; hamamelis, for black evacuations followed by much bleeding. Sulphur often effects a cure after other remedies have failed. Keep the bed warm and dry and feed a cold diet, as milk, rice and milk, and the like, but no solid food before recovery. Mutton-broth will often alone effect a cure, without resort to any medicines.

COLIC.—GRIPES.

Colic, or spasm of the intestines, is caused by cold, constipation, bad diet, worms, and, in puppies, by disordered milk of the mother. It is marked by fitful pains, the dog turning, rolling and moaning, such spells being followed by perfect ease.

TREATMENT.—Nux vomica is needed for constipation and short spasms. Relief will often be afforded by injections of warm water; also by applying to the belly pieces of flannel wrung out in hot water.

CONSTIPATION.

This is caused by improper food, want of exercise, and deficient secretion of digestive fluids. It is both a symptom of many diseases and leads to

many. In addition to the frequent unsuccessful efforts to empty the bowels, there will be restlessness; flatulence; colic; hot, dry nose.

TREATMENT.—Medicines may be selected from those given for Constipation in the Horse. Use repeated injections of warm water, first thoroughly removing all hard fæces that may be near the anus. If constipation is habitual in an animal, look well to the diet. A small quantity of raw meat once daily may correct the trouble. Other articles suitable as diet are well boiled oatmeal porridge, coarse flour cakes, meat boiled in water to a thick porridge. Insure free outdoor exercise.

INFLAMMATION OF THE LIVER.

This is a common disease among dogs, generally in a chronic form, and is especially frequent in over-fed and much-petted animals. It is caused by cold, damp, want of exercise, excessive heat, and injuries. The symptoms are much varied, among them being shivering, followed by increased heat in the skin; desire for retirement; loss of appetite and flesh; thirst; cough, followed by vomiting of yellow or greenish fluid, perhaps tinged with blood; yellow hue on the lips, eyes, ears and, later, the whole skin; wasting may reduce the animal to a pinched-up skeleton in fatal cases.

TREATMENT.—Treat the same as Inflammation of the Liver in the Ox. Give only cooked food, in small quantities and regularly. If, however, the animal is not prized as a pet, its cure will scarcely be worth the pains required, even if one knows what the disorder is.

WORMS.

Worms are found in dogs almost universally. Three kinds exist in the intestines, most likely introduced in the food and drink, namely, the round worm, resembling the earth-worm, which sometimes passes up into the stomach and is vomited up; the maw-worm, resembling a short piece of white thread; the tape-worm, of great length, formed in segments or joints. Each kind is likely to cause some special symptoms. The first one, for example, in addition to the general indications named below, may even pass up through the throat into the nose and cause much irritation. The maw-worm produces itching at the rectum. The tape-worm causes colic, convulsions, distension of the abdomen, constipation, and inflammation of the bowels. While the discharge of worms is an unmistakable symptom, their presence is also indicated by dullness, restlessness, depression, bad temper, short, dry cough, offensive breath, appetite variable, often enormous, dry, shaggy hair, loss of flesh, constipation or diarrhœa.

TREATMENT.—Cina is the most valuable general remedy, and is alone often sufficient. *Urtica urens* is to be given when the dog slides along on his haunches, or when maw-worms are known to exist. Another good treatment for maw-worms is a daily injection of a half-ounce of garlic poured on two ounces of boiling water, the fluid being cooled and strained before it is used. *Felix mas* is especially efficacious for tape-worm. Santonine is invaluable for round worms when other remedies fail. Sulphur may beneficially follow other remedies. An entire change of diet may be necessary.

CHOKING.

In eating, the dog may be troubled by a piece of bone, gristle, or other substance lodging in the throat. He coughs, is restless, can not swallow, seems to be trying to remove the obstruction with his paw, while mucus escapes from the nose and mouth, and the eyes are red and prominent.

TREATMENT.—Open the mouth as wide as possible and pour in warm water until the dog vomits. This may remove the obstruction. If it fails, draw it out with forceps, if it is within reach. Should these expedients fail, use a piece of whalebone, or smooth, tough stick, protected at the end with a piece of sponge dipped in oil, to push the obstructing body into the stomach. If all such means are unsuccessful, a skillful operator may open the œsophagus. If this canal is known to be injured, or if there has been considerable effort made in the removal of the obstruction, give arnica two or three times a day for several days, a milk diet being meanwhile provided.

INFLAMMATORY FEVER.

Dogs of all breeds and ages, but especially when from one to three years old, are subject to inflammatory fever. Though it is usually the result of some inflammation, internal or external, it may be caused by any sudden changes in the temperature of the body, or by unusual excitement. At first, the animal is very sluggish and drowsy, afterward showing extreme restlessness, much thirst, quick, hard pulse, rapid breathing, swollen, watery eyes, burning heat all over, dry, hot nose and mouth, increasing restlessness, perhaps unconsciousness.

TREATMENT.—Give aconite at first, especially for dry, furred tongue; great thirst; thick, dark urine. It will often effect a cure. Arsenicum is needed for hot, dry nose; extreme thirst; high heat of the body, especially in the legs and feet. Belladonna is useful for much restlessness and unconsciousness. Opium is needed for a sluggish state, and arnica when an injury is the cause. Avoid extreme changes of temperature.

PUTRID AND NERVOUS FEVER.

If shut up in dirty lodgings, or fed on damaged or decaying food, or if subjected to undue heat or effort, dogs may be attacked with this form of fever. The symptoms are loss of appetite; restlessness; fitful shivering; dull, heavy look; starting; howling; spasms; eager thirst; quick, small pulse; high-colored urine passed in small quantities; offensive excretions of the skin and bowels; death in a few days, if not early treated.

TREATMENT.—Aconite is highly useful in the first stages for fever, restlessness, and offensive, high-colored urine. Gelseminum is needed for sudden weakness, loss of motion, and jerking of muscles. Give belladonna for glistening eyes, hanging tongue, and unconsciousness. Furnish dry, cool lodgings, with frequent supplies of cold water. Give small allowances of cold milk, with a little bread in it if the animal will eat it.

SMALL-POX.

This is more common in young dogs, and results from contagion. The symptoms are fever; patches without hair, becoming red, then covered with small spots, like insect-bites, which increase and grow pale in the center, with a red circle around the edge. In five or six days these spots contain a clear fluid, which soon turns yellow, the tops become hollow, and then break. Scabs form and fall off. The breath and excrement are disgusting. A return of appetite, with cool, moist nose, indicates recovery. But the animal should be killed at once if the symptoms progress, the nose being hot, tongue hanging, thirst great, breathing hard, with constipation and increased color in the spots; or if the spots do not rise above the skin, or if they run together.

TREATMENT.—Antimonium tartaricum is desirable when the eruption is clearly seen; belladonna for delirium; mercurius if saliva fills the mouth, and if there be bad breath and diarrhœa. A dose or two of sulphur is desirable to complete a successful treatment. Furnish cool, airy lodgings, without draughts; sprinkle the place often with carbolic acid. Change the bedding every day, and burn it, with evacuations of the bowels.

RHEUMATISM.

Stiffness and tenderness of the fore legs and chest in dogs are known as rheumatism, and are especially common in those kept for the house or sporting. It is caused by sudden cold or dampness, plunging into water when hot, a cold, wet bed, and over-exercise. It is marked by stiff fore legs

and shoulders, with hard, tender muscles of the chest; swollen, hot, tender knees; hastened breath; poor appetite; dry, hot nose; howling upon putting the foot down.

TREATMENT.—Select medicines from those given for Rheumatism in the Horse. Give no meat diet, and keep the animal warm, dry and out of bad weather.

COLD.—CATARRH.—SNIFFLES.

This is usually in the form of an inflammation of the mucous membrane of the nose, occurring especially in dogs that are kept in warm lodgings. It may end in distemper, bronchitis, or other disorders of the respiratory organs. Its chief cause is change of temperature, and its symptoms are running discharge from the eyes and nose, sneezing, failing appetite, hastened breathing, dullness, heaviness, sleepiness.

TREATMENT.—Give aconite at first, for quick breathing, shivering, hot surface, and uneasiness; *nux vomica* for sneezing, dry cough, loss of appetite, thirst, unsuccessful attempts at vomiting, and constipation. *Mercurius* is needed for thick, clogging discharge from the nostrils, nose alternately hot and cold, eyes inflamed and glued together, and swelling of the throat. Keep the animal constantly in a warm place a day or two, feeding him milk or thin oatmeal-gruel, with plenty of water to drink. Sponge the nose with tepid water several times daily.

SORE THROAT.

Damp lodgings or sudden exposure to cold when heated will produce sore throat. The first symptoms are sneezing and hoarse cough, followed by alternate heat and cold in the ears and nose; noisy breathing; swelling about the jaws and throat; difficult swallowing; the swelling may extend to the front of the neck and, if very bad, cause suffocation.

TREATMENT.—Aconite is to be given at the beginning for fever and difficult breathing. Then choose remedies from the list given for Sore Throat in the Horse. Frequently apply to the throat cloths dipped in hot water, and give cold water to drink at short intervals. The diet should consist of milk and broths. Keep the dog in a warm, dry place, free from draughts.

ASTHMA.

This disorder, characterized by alternate periods of fever and difficult breathing, occurs most frequently in fat and petted dogs, as a result of close

confinement, over-feeding, and want of outdoor exercise. It begins with a cough, so slight and irregular in recurrence that it is likely to escape notice, but growing more frequent, annoying, dry, harsh, and sounding as if there was choking; changes in temperature or food aggravate the cough, so that it is nearly incessant, disturbs sleep, and causes nausea and discharges of mucus from the respiratory organs; the breathing is disordered, perhaps painful; digestion deranged; appetite failing or morbid; breath offensive; hair shaggy; skin mangy. The animal may succumb to suffocation or to exhaustion from coughing; may be seized with convulsions; or, more commonly, is attacked by dropsy (to the treatment of which the reader should refer in such cases), though suffocation will generally follow this issue of asthma.

TREATMENT.—Treat promptly in the beginning; if not, a cure will not be effected, though relief can be given in later stages. Give *nux vomica* every four hours on the days when there is an aggravation of the symptoms; at other times, give *arsenicum* three times daily. For paroxysms of difficult breathing, with inclination to vomit, give *ippecac* every three or four hours during the paroxysms. Provide the best and most nutritious food, in small quantities, but often. Secure daily exercise in the open air, except in cold, damp or sultry weather.

BRONCHITIS.

Bronchitis is an inflammation, acute or chronic, of the mucous membrane of the lungs, caused by sudden changes in temperature, draughts of air in the lodgings, or standing in the cold when heated. Its first symptoms resemble those of cold, namely, shivering and short, hard cough; later, a constant, distressing cough, dry at first, then with sticky mucus; symptoms of fever; quickened pulse and breathing; dullness; failing appetite; anxious look in the face; nose hot and dry at the commencement, but moist when inflammation subsides. In chronic cases, there is a cough during the winter, coming on after changes in the weather, and attended with short breath and wheezing.

TREATMENT.—The appropriate remedies can be readily selected from those prescribed for Bronchitis in the Horse. During treatment keep the dog in the house, in a warm temperature. Milk and bread are the best diet, flesh being especially avoided. Supply fresh water all the time. Meat-broth may be given to old dogs that are very weak. The disease is one to which the dog is more liable than is generally supposed. It may often be avoided by a proper sheltering of an animal after it has become heated by a hard run.

INFLAMMATION OF THE LUNGS.—PNEUMONIA.

Pneumonia, a frequent affection in dogs, is an inflammation of the substance of the lungs, and is thus different from bronchitis, which affects only the mucous membrane. It is caused by sudden exposure to cold, bathing without drying carefully, clipping in bad weather, and sometimes by distemper, catarrh and bronchitis. The symptoms are quite marked: At first, shivering; tender sides; short, painful cough; fore legs wide apart; pulse quick and hard in the beginning, but becoming gentler and not easily felt; nose hot and dry, with inside membrane redder than normal; hanging tongue; breathing hurried and labored; the animal sits on his haunches, with the head stretched out and mouth open, and seldom lies down. The lungs may completely fill up, giving a dull, heavy sound if struck.

TREATMENT.—Give aconite, at first, for hot skin, quick and obstructed breathing, full, quick pulse, and shivering. Camphor is useful for shivering, dullness, small, quick pulse, and hurried breathing. A short, dry cough, with grunting at every breath, calls for bryonia. Bromine is useful if it is known that the air-tubes are filling up, or if the inflammation keeps up and threatens suppuration. Use it internally and by inhalation. Furnish a dry, warm bed, but not in a warm, close room. Insure fresh air, free from cold and draughts. Use covering if the weather is cold. Give fresh, cold water, milk, gruel and broth, avoiding solid food.

PLEURISY.

This is an inflammation of the membrane which lines the cavity of the chest, and may result from cold and wet, atmospheric changes, or distemper, or it may be a complication of pneumonia. There is first shivering, then fever, twitching of the muscles, short, quick, irregular breathing, painful, suppressed cough, and pain from pressing the side. The dog stands or sits all the time. Swelling on the legs, chest and belly indicates the super-vention of dropsy in the chest.

TREATMENT.—Choose remedies from those given for Pneumonia in the Horse, and observe the same particulars as to lodgings, clothing and food as were mentioned for Pneumonia in the last article above.

COUGH.

Nearly always a cough is symptomatic of disease, and when it appears, should be compared with the cough noted in each of the diseases of the respiratory organs considered above, to ascertain what is threatened,

and what general measures are needed. High feeding may cause cough; in which case the amount of food should be diminished, exercise taken, and antimonium carbonicum be administered. If the cough arises from going into the water, or being washed in warm water in winter, or being confined in a low, damp situation, give aconite and mercurius, the cough in such cases being harsh, hard, and attended with vomiting of tough mucus.

ECZEMA.—SURFEIT.

This results from a hereditary tendency, and is not contagious. It is often mistaken for mange, the remarks on which the reader should compare with the present ones. The hereditary germs of the disease will be developed by insufficient exercise, food that is unwholesome or given in too large or too small quantities, close lodgings, dirty, hard, or too luxurious bedding, or barley-straw bed, and flesh-food also encourages it.

Symptoms.—Continual scratching; inflamed patches from which flows a fluid that mats the hair, and forms scabs which come off and leave the skin bare, inflamed, and discharging a thin, watery fluid; this fluid dries and forms scales, which the dog rubs, as he does the scabs, until pustular eruptions form and present the appearance of general ulceration. The affected patches will oftenest be found on the back and inside of the thighs. In fat, over-fed animals the skin is robbed of the hair, becomes very thick in places and is deprived of feeling, so that pinching is agreeable instead of painful; the dog is a repulsive sight, lies around, dull, sleeping, scratching, biting and licking the sores; is wrinkled, chapped, ulcerated and of a foul smell, the skin discharging all the time a disgusting mattery fluid. The disease may be of a local character; for example, in sporting dogs it attacks the toes and feet especially, sometimes exclusively. Whatever its extent, however, its duration is uncertain, its cure difficult, and its return likely to occur, as may be expected in a hereditary disease.

TREATMENT.—Rhus is needed for redness of skin; blotches; cracked skin; small yellowish pimples, which run together. Mercurius is invaluable for eruptions that become pustular after a while, or those which are once dry, then moist. For burning heat, great itching, scaly eruptions, pustules becoming ulcerous, and for advanced cases attended with diarrhœa, weakness, loss of flesh and distended abdomen, give arsenicum. Insure absolute cleanliness. Wash the sores gently with tepid water and dry at once. Use a lotion of rhus when giving the same internally. Repeatedly change the bed and air the lodgings, providing a full supply of fresh water, and giving free, moderate open-air exercise. Be careful in the diet. Allow no flesh at all, except perhaps from one ounce to two, according to

the size of the animal, to sustain life after more than three days of perfect abstinence from eating. Though a little flesh might be allowed in case of weak puppies, or when great weakness has come on, broth is better even then. Large, hardy animals may be without food a few days and no harm result. It is a safe rule to keep the animal pretty strictly on a diet of vegetables and articles of food made from the flour of grains.

MANGE.—ITCH.

This disorder is liable to confusion with eczema, and the reader should compare what is said on that disease with the remarks here made. It is not of frequent occurrence. It is caused by parasites in the skin and presents the aspect of the like affection in the horse, to which the reader is referred. The parasite may be transmitted to the human body, but does not there remain so stubbornly as in the dog. Conditions that are favorable to the development of the parasite are close, unhealthy lodgings, dirty, damp bedding, or general uncleanness, want of air and exercise, bad or deficient food. The symptoms are thinning of the hair; dry, scaly, ridgy skin, especially on the neck, back, ears and eyes; rubbing and scratching, resulting in red spots, or pimples, which burst, their discharge forming yellowish crusts and brownish scales; the dog is dejected, except under special excitement; appetite good and thirst excessive, the body being feverish; in a few weeks the whole body may be affected, and if the disorder is neglected, the dog may become poor, bloated, weak, and hopelessly diseased.

TREATMENT.—The killing of the parasites is necessary to a cure. To effect this, follow the directions given for the removal of lice, ticks and fleas given in the following article. If this fails, use one of the ointments mentioned in the treatment of this affection in the Horse. It may be necessary to resort to an ointment composed of one ounce of mercury to one pound of lard, well rubbed into the skin, but the animal should not get wet during its application. Promote a good condition of flesh and general health as a preventive of a recurrence.

FLEAS.—TICKS.—LICE.

These pests cause the dog much inconvenience and the household much annoyance. They cause the dog to scratch and rub himself, and give rise to small pimples which are torn open and discharge serum or matter and form sores. They may be on any part of the body, but lice are more often found on the head and about the eyes and lips. Scratching and un-

easiness will at once show that they are present, and an examination will readily bring them to view.

TREATMENT.—There is no cure except the absolute removal of the parasites and destruction of their eggs. Wash the dog with warm water and soap, well rubbed into the skin, carefully cleanse with tepid water, and dry thoroughly by rubbing before a fire. Then sprinkle with tincture of camphor, and carefully use a comb and brush to remove the eggs on the hair. This may be repeated two or three times, the eyes, lips and ears receiving special attention. The pests may be driven away by a free rubbing with an ointment made of one ounce of sulphur and a pound of lard; or one made of equal parts of sulphurous acid and water or glycerine; dilute carbolic acid may have the same effect. Sulphur internally may be desirable along with the application of the sulphur-ointment. If the eruptions do not disappear, give arsenicum three times daily. Destroy all the bedding and cleanse the lodgings with carbolic or sulphurous acid. Dogs which are admitted to the house should be frequently and well washed.

INFLAMMATION OF THE KIDNEYS.

This is a very dangerous disease, but not common, and is caused by exposure to cold and wet, over-exertion, strains, injuries, seasoned food, gravel, and turpentine and cantharides as medicines. It is marked by stiff, straddling hind legs in walking; tender loins; hot, dry nose and mouth, with great thirst; turning of the head toward the loins; urine scanty and high-colored, or thick and clear, and passed with straining; failure of appetite; inclination to keep quiet; the back arched during motion.

TREATMENT.—Use the remedies mentioned for this disorder in the Horse. Wring out cloths in hot water and apply them to the loins, changing them often. Give an exclusive diet of milk for some days.

INFLAMMATION OF THE BLADDER.

This is sometimes the result of cold and of wet lodgings, but may ensue upon running about after being tied up, or from injuries, gravel, and dosing with cantharides. The urine is sometimes clear, at other times thick, cloudy and bloody, passed in very small quantities, with frequent attempts; generally matter is discharged from the penis; hind legs trembling; belly about the bladder hot, tender and distended.

TREATMENT.—Aconite and cantharis in alternation will often be sufficient. Cannabis is useful if the first two remedies do not effect a cure, and if there is great pain during and after urination. Give a diet of milk.

INFLAMMATION OF THE TEATS.

This comes on a few days after parturition, and is first indicated by small, tender lumps at the base of the teats. The swelling soon increases and extends around the teats, the latter becoming very hot and red. The suckling of the pups may be so painful that the mother will not allow it, and then the inflammation involves the whole udder, perhaps going on until suppuration occurs and an abscess forms at the base of one or two teats.

TREATMENT.—As soon as the inflammation is detected, give aconite, alone or alternating with belladonna. If, after a few doses of such medicine, the inflammation and swelling increase, give chamomilla internally and apply to the affected part a piece of soft rag dipped in a lotion of the same.

DISORDERS OF THE EYE AND EAR.

INFLAMMATION.—The dog is frequently affected with an inflammation of the eyelids and eyeballs, known as ophthalmia, which is due to a change of temperature, heat, dust and violent exertion, the disorder sometimes appearing as an epidemic. The eyes are watery and very sensitive to light, a discharge drying on the lids and around the eyes so as to glue them together. The white of the eye is covered with red streaks; sometimes ulcers appear on the front of the eye and may continue until they let the fluid out of the ball, with proud flesh following.

TREATMENT.—Aconite, if given promptly in the first stages, is often sufficient for a cure. Give belladonna, after the use of aconite, if there is still great sensitiveness to light, the eyes being shut, inflamed, dim and watery. Mercurius is suitable for discharge of mucus, swelling and sticking eyelids, and threatened ulceration. Sulphur tends to prevent relapses, and is also good for chronic cases. Use arnica internally and externally when external violence is the cause. If the disorder results from eating too much soft food, with little exercise, as it may, allow no flesh-food, and compel the dog to move about when the severe symptoms subside, keeping him in a cool place. Allow him to stay in a dim light until he voluntarily comes out. Wash the eye frequently with tepid water to prevent the discharge from drying on the eye.

ECZEMA OF THE EYELIDS.—This disorder appears in the form of pustules at the roots of the lashes, on the edges of the lids. These soon break and the discharge dries and glues the eyes together, the ulceration, if not stopped, extending until it destroys the roots of the lashes, causing them to permanently fall off.

TREATMENT.—Clip the lashes close and wash the parts night and morning, to avoid the gluing process. If crusts have formed, soften and remove them with warm water, avoiding all force in taking away any deposit. Mercurius corrosivus should be given night and morning, an application being made on the eyelids composed of one grain of the same and one drachm of cosmoline, this being put on with a camel's-hair brush.

CANKER IN THE EAR.—This is a disorder occurring mainly in old dogs, or fat, over-fed ones. It may result from distemper, and is often caused by exposure to cold and dampness. Its symptoms are shaking of the head; whining; rubbing the ear against any object, or scratching it, followed by howls of pain; the inside of the ear is red; in a few days an offensive discharge comes from the ear, which increases in quantity. The disease is liable to become permanent if neglected.

TREATMENT.—Give belladonna at first, previous to the discharge, for red, swollen inside of the ear. Mercurius is needed when there is a thick, offensive discharge, tinged with blood; pulsatilla, for thin discharge, or when distemper is the cause; and arsenicum if there be weakness, and irritation of the skin from the discharge. Frequently wash the ear with warm water and inject warm milk and water into it with a small syringe. When the discharge decreases, use a lotion composed of one drachm of carbolic acid, two drachms of glycerine, and six ounces of water.

DEAFNESS.—Distemper, fever, inflammation of the brain, general debility, hardened wax, canker, or old age may cause deafness.

TREATMENT.—When the hearing fails, ascertain whether hardened wax is the cause. If so, inject a little warm water and pure castile soap twice a day, until the wax is soft enough to be removed. If distemper is the cause, give pulsatilla; if fever or inflammation of the brain, belladonna; if canker, hepar.

SCURFY EARS.—Scurf occurs more frequently on the ears of dogs with short hair. It usually starts from the tip and extends to the roots. Its causes are improper food, filth, sudden disappearance of mange, and natural tendency.

TREATMENT.—Arsenicum is to be given for dry, hot ears, the scurf falling in scales; sulphur for rapidly spreading scurf, and itching; hepar for tender ears and moisture under the scurf. Wash the ears once daily with warm water and soap, dry them, and apply with a sponge a lotion made of one part of glycerine and six of water.

SWELLING OF THE EARS.—A pale, straw-colored fluid sometimes accumulates between the outside and inside layers of the skin, generally as a result of an injury. It may increase slowly or rapidly. It is best to open the swelling at once, on the inside of the ear at the lowest point, and press

out the fluid. This may be sufficient; but it may continue some days if a blow has been the cause. The fluid may collect two or three times if the opening is not kept free, in which case inject a little warm water, and bind the animal so as to keep the ear in a vessel of warm water for five or ten minutes once daily for several days.

SORE FOOT.

This disorder affects the elastic bottom of the foot, and is caused by any of the many mechanical injuries incident to running about. The paw swells, bleeds, is painful, scales off, perhaps has hard lumps, causing the dog to limp, and possibly the skin and nails to come off.

TREATMENT.—Carefully remove grit, thorns, or other foreign substances, bathe in warm water, apply cloths saturated with arnica-lotion, giving arnica internally at the same time. If there are signs of fever and suppuration is threatened, apply linseed poultices containing a few drops of arnica. If suppuration has taken place, open the sore, and apply poultices mixed with a few drops of calendula, night and morning. When all the matter is removed, in place of the poultices use cloths saturated with calendula-lotion. During such applications, muzzle the dog to keep him from tearing them off. When improvement begins, put on a shoe, preferably leather, to keep out dirt and remove pressure for a few days. If the feet are merely tender, the licking of them by the dog will often suffice; great relief may also be given by warm fomentations.

GENERAL MENTION OF DISORDERS.

Disorders which occur more or less often in dogs, but are not specially treated here because they are quite easily recognized, and are sufficiently considered in the Horse to enable one to select suitable treatment from their respective articles in Part II, are Dropsy, Abscesses, Boils, Tumors, Warts, Burns, Scalds, Gonorrhœa, Protrusion of the Rectum and Womb, Cataract, Pterygium, Cuts, and other Wounds and Injuries.





PART VII.

THE CAT AND ITS DISEASES.





203. HANDSOME TOM.

PART VII.

THE CAT AND ITS DISEASES.

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ORIGIN AND HISTORY.



THE admirer of the cat inquires about the origin of the graceful pet which sings on the rug or lies so comfortably on the lap of its mistress, and he learns that "blue blood" runs in the veins of the large family, scientifically speaking, to which it belongs. It is a member of the great class of felidæ, whose proudest representatives are the kingly lion and the royal tiger. In spite of much discussion, the question of the origin of the domestic cat is still without a satisfactory answer. It is very generally conceded that it descended from either the cat of ancient Egypt or the wild cat, but authorities are pretty evenly divided upon the two parts of this question. Mr. Wood says, "as far as is at present known, the Egyptian cat is the origin of our domestic cat," and we accept his conclusion, as well as his statement that it came to western and northern countries through Greece and Rome.

That it was known in very early times is shown by many allusions to it in the books of the Sanscrit language, which date back thousands of years before the Christian era. In ancient Egypt it commanded a veneration which staggers our credence. We are told that a Persian king captured an Egyptian city without opposition by resorting to the stratagem of giving a living cat to each soldier when going to battle, the enemy offering no resistance lest the sacred animal be killed. Stories of a like kind are

mentioned in history, and we learn that the death penalty was inflicted on any one in Egypt who killed a cat. This animal held a high place in the public and private worship of that land, as we read in the pages of history, and as is further proved by the vast numbers of images and adornments representing it which have been discovered in later times. Hosts of them were embalmed, and that, too, by the costly process used on the royal families, so that it may be said that Egypt permanently preserved the bodies of her kings and cats.

We find that the Turks had and yet have a profound respect for this animal, handsome sums being devoted to hospitals for its care and treatment. In the tenth century Howell the Good, of Wales, imposed a heavy fine upon any subject who killed a cat. In the Middle Ages a different sentiment was rife, superstition connecting the animal with witches and Satan, especially if it were black—a superstition which is not unknown to-day. Great numbers were burned alive on St. John's Day in a certain quarter of Paris, the king starting the fire, Louis XIV being the last ruler to perform this proud royal act. To such superstitions and barbarities may perhaps be traced the prejudice of modern times against this innocent animal. In both ancient and modern Germany there has been a peculiar dread of a black cat and its supposed Satanic influences. In Sicily cats are held in almost extravagant esteem. In England and America not a few have ridiculous notions upon the curative properties of the blood, skin and other parts, to say nothing about fancied relations to Satan and witches.

Over against the repugnance to the cat which many profess, often because it is simply the fashion, one may mention, as a few of the great number who have admired and fostered the animal, Richelieu, Cardinal Wolsey, Montaigne, Fontanelle, Turner the painter, Tasso, Pierre Jean de Beranger, and Dr. Jonson. Adding the weight of the tastes of such men to that of the favors shown in ancient times, we catch the force of the saying that "a cat may look upon a king."

TRAITS.

He who dispassionately studies the traits of the cat will recognize a measure of aptness in the old Arab's saying, that Allah had placed in the cat the spirit of a gentle woman, and in the dog the soul of a brave man. At the present time, however, any claim of gentleness for this animal is promptly met by the unsupported assertion, that "the friendship of years is suddenly and irreparably broken by an accidental tread on the tail," and an invidious comparison is drawn by alluding to the patient and forgiving affection of the dog. The cat is by far the more delicately constituted in

the nervous system, and is thus exposed to the most exquisite pain and distressing shocks. But in spite of this, if she has been properly treated before, it takes but slight assurances that no harm was intended to call forth fully as much kindness as the dog will show. This difference is noticeable: the dog will take pains to cultivate friendship with those who are indifferent or unkind, while the cat will cultivate it only where it is evidently mutual.

If those who harbor such a prejudice will exercise a disposition to learn the facts, they will probably corroborate the view of one keen observer who has said that he had "never known a cat to cement a friendship with any one without such friendship lasting till death." Dr. Stables has given a large number of instances in which she has staid by the sick-bed of her master or mistress, almost to the point of starvation; has evinced unquestioned loneliness in the absence of that one in the family who has shown her special kindness; has lain by the cradle of the babe and kept off other cats, and even dogs; and has been trained to such a point as to sport with and protect pet birds, when she would immediately devour any of their kind that she might find in their natural freedom. The testimony of that writer is fully sustained by any one who has been observant of the cat when it is kindly treated and trained. One frequently-cited evidence of her innate kindness is her nursing of puppies, rabbits, rats, and other animals. It is readily seen that, in addition to her proverbial attachment to places, which leads her to seek her home when taken away a long distance in the closest confinement, she is disposed to be as closely attached to persons and dumb creatures. Not only may she be educated to become the protector of animals which she is naturally prompted to destroy, thus disproving the existence of an alleged "ineradicable treachery," but her marked propensity to steal may be so completely overcome by training that her choicest food will be untouched in the larder to which she has access. Indeed, as we might infer from her delicate organism and high type of cunning, she has a docility which has a parallel in few animals, and it but requires pains to develop it. It may be safely said that those which display the disagreeable traits of petulance, theft and treachery are starved, ill-treated, spoiled, or at least much neglected. The strict cleanliness of body which they maintain, the noiseless and graceful demeanor, and the notable absence of a disposition to do willful injury to furniture and adornments, make cats peculiarly fit for drawing-room pets.

The prejudice of to-day is almost wholly due to a disregard of two points, namely, the selection of a proper subject, and the requisite care and training. One will necessarily form a low estimate of the animal if he bases his conclusions upon the stray representatives in whose veins runs

the blood of all chance mongrel breeds, which have "shifted for themselves," and have had no protection against bad weather, bad food, bad dogs and worse boys. Heredity is as well defined in cats as in other animals, and good or bad habits will not only be transmitted, but may be confirmed or corrected by education. No more will this pet be agreeable and prized without training than others, nor will others more readily and fully reward one for the pains that he may bestow.

VARIETIES.

The varieties most sought as pets are the Angora (also called Angola, because some think that it originated in Angola, in Africa, instead of Angora, in Asia Minor); the Persian; the Chinese; the Spanish, or Tortoise Shell; the Chartreuse, or Blue; the Manx; and the Tabby.

The Angora is the most beautiful of all. It is large, and has long, silky fur, and a gorgeous, brush-like tail. It is generally perfectly white, but may be a pale-yellow, or almost olive-colored. Whatever the color, it is pretty, gentle and delicate.

The Persian is "beautiful in luster and color of its skin. It is a gray-blue, and as soft and shining as silk. The tail is of great length and covered with hair six inches long, which the animal throws over its back after the manner of a squirrel." The hair on the neck is also very long, and the color is said to be sometimes pure white.

The Chinese, which some claim is not properly a cat, is rather above the ordinary size, has fine, glossy fur, and hanging ears.

The Spanish, or Tortoise Shell, is white, black and reddish-brown mixed, and is very elegant in form.

The Chartreuse, or Blue, has long slate-colored fur, and a bushy neck and tail. This is perhaps what is popularly known as the Maltese.

The Manx has long, slim legs, close-set fur, staring, restless eyes, and no tail, there being only a knob in its stead. It is an unearthly looking creature, and "might fitly be the quadrupedal form in which the ancient sorcerers were wont to clothe themselves on their nocturnal excursions." There seems to be little doubt that some animals presented at cat-shows as specimens of the Manx are really common cats with the tails cut off. Indeed, not a few even yet say that the Manx is a myth, though some high authorities do not question its existence.

The Tabby is striped, like waved or watered silk, and may have any of a variety of colors. In technical language, we apply this name to those that have such marking, but it is popularly used for any grown cat.

In addition to the above, mixed breeds in great variety present almost

every conceivable color, from perfect black to spotless white, and many of them are desirable as pets and valuable as mousers.

HEALTH OF CATS.

Most people never think that a cat suffers a loss of health that is worth notice, and they entirely neglect their pet until it is perhaps found dead in the alley. To expect an animal of such a delicate organism to be free from disease is most unreasonable. It is doubtless true that many have little concern, too, whether the cat suffers or not. Two classes will perhaps put a low estimate on a work which is devoted to the comfort and health of an animal which they lightly esteem. One class will be found in the country, where vile mongrel cats are the only ones known, and whose only redeeming characteristic is a fecundity that supplies the demand as rapidly as it is made by the deaths which ensue from neglect and cruelty. The other class will be those who cultivate the contempt for the cat which many profess, because they suppose it is popular, without reflecting that it is not an evidence of superior taste to despise what God has created. But the great admiration—often extravagant, of course—evinced for this animal by a host of good people, the high money value put upon it by such people and by most people in our cities, and the frequent applications made to the family physician when a favorite cat in the household is suffering, all point to a large class who will welcome the present treatise. Before the treatment is entered upon, a few hints are in order upon the care which is calculated to ward off in great measure the ailments to which this animal is subject. To preserve the health, the smoothness and gloss of the fur, and the temper, one must regard the food, drink, housing, and general management.

Food.—In this matter perhaps no error is more general than that of starving a cat to make it a good mouser. The practice has arisen from the mistaken notion that a cat kills mice and rats for food only, while the truth is that she does it quite as much because it is at once her sport and her nature, and that she will follow it up more faithfully if she is properly fed and kept in her normal health and spirits. If one wants his pet to become a thief and prowler, with an abundant stock of fleas and vermin, let him neglect to feed her regularly. Give at least two meals a day at regular hours. After each feeding remove the dish and never use it a second time without first washing it. The quantity that is requisite can best be determined by experience, but some breeds, the Angora in particular, require more than others.

Oatmeal porridge and milk, or white bread soaked in milk a little

sweetened, will make a good breakfast. For a dinner, the same may be given with an allowance of flesh. Horse-meat is much used in Europe, and is good, though liver and boiled lights are better. Fish is the favorite meat of the cat, and should be at least occasionally provided, particularly during sickness. Oysters are also well suited to its wants and are keenly relished by some. Raw beef is, of course, to be recommended. An excessive amount of flesh, however, tends to produce diarrhœa, liver being especially conducive to this derangement. Boiled eggs at regular intervals are desirable, as are also vegetables of any kind that the animal likes.

Though the food should be ample for the needs of the cat, over-feeding is one of the most prolific sources of mischief. Sweet, fresh milk should always be given in abundance, and this, with the oatmeal or bread, will be quite sufficient in most cases. The mice which the cat will contrive to get will generally be an adequate supplement. Delicacies from the table are always to be withheld. It may be said in this connection that a cat's disposition is often spoiled by feeding it from the table while the family is eating. This should not be allowed, and a little training will induce her to patiently await her time, even if she sits by the table during the meal.

GRASS.—A lady writer says: "Cats will never prosper without grass to eat. It is, with them, a panacea for nearly all their ills. They eat it to keep the stomach in good order. It cools the blood, prevents humors, and aids digestion." It is supposed that the eating of grass helps the cat to get rid of the hair which it swallows in the process of washing. While licking itself, the loose hair clings to the tongue and is swallowed. In the stomach it tends to form hard balls, which interfere with digestion and act as an irritant to the stomach and bowels, causing fever, fits, vomiting and dysentery. The grass acts in such cases as a lubricant, like castor oil, enabling these balls to be easily thrown off by the stomach or bowels. Grass can be supplied to cats in the winter by laying by a few cuts of sod in the cellar, conservatory, or any warm place, being kept watered, and a small piece being given at a time. They will eat it greedily, and even swallow the roots. If it causes them to vomit no harm will be done. If a cat appear ill, tries to vomit, or vainly tries to evacuate the bowels, and no grass can be procured, give a teaspoonful of castor oil, sweet oil, or glycerine. The readiness with which most of them will feed upon asparagus in the garden should induce one to keep a supply in reach when practicable; and their natural preference for catnip will suggest a like course, for it is well-known that cats take delight in rolling about in catnip, whether dry or green.

DRINK.—Of milk we have already spoken; but it is a mistake to suppose that it is always preferred, since water will generally be chosen for

the mere quenching of thirst. Both should be kept in a particular place, in different vessels, or in separate divisions of a double dish. The drinking-vessels must be washed at least once a day and a fresh supply be provided as often, for milk that is the least unsavory will not be taken by a well-bred cat, unless hunger forces it to accept it, nor will it drink water if it is not fresh and free from dust.

HOUSING.—If one is to have a cat that is fit to be seen in the parlor, or to be allowed in the house at all, he must give it suitable housing. If he turns it out at night, it will, in addition to becoming a thief and prowler, surely be gaunt, ugly, unhealthy, and covered with lice and other vermin from its visits to the roosts of poultry and birds. If properly fed and treated during the day, it will not be inclined to go out at night. Make a good bed in a clean, cosy place, give free access to different parts of the house, and do not put your cat out at night unless it shows a marked desire to go. Many people turn it out to keep it from soiling the carpets, but this is unnecessary, for proper management will supplement its natural dainty cleanliness, and thus prevent this practice, unless sickness or too close confinement induces it. It is always well to place a sand-box in some remote part of the house, and to keep it accessible at all times. Not only can one train his cat to use it herself, but she will also teach her mates and kittens to do the same.

CARE OF THE FUR.—The Hindoo word for cat means "the cleanser," and an apt use of the term it is, for no other animal keeps itself in such exquisite cleanliness. No one should fail to keep the apartments in which the cat is kept as clean as possible. If she is compelled to wear a dirty coat for a considerable time, it will be the more to her credit if she does not become discouraged, careless and slovenly. At times the surroundings will be such that the soiling of the fur will be unavoidable, and it is then best to give an occasional bath with warm water and the mildest of soap, carefully drying with towels, in a warm room, to prevent the contracting of a cold. For obvious reasons, white cats will be more often treated in this way, and perhaps the water which gets into the ears, and the colds which are taken, aggravate the alleged liability of those of this color to become deaf—a liability which is grossly exaggerated by many.

To insure a clean, glossy coat, give at times an ounce or less of fresh butter. "It not only acts as a gentle laxative, but the grease, combining in her mouth with the alkalinity of her saliva, forms a kind of natural cat-soap, and you will see she will immediately commence washing herself, and become beautifully clean." When the fur is rough and "seedy," give a saucer of milk, warmed a little with hot water and slightly sweetened with sugar. If cream is smeared about the mouth or on the paws, the cat will

lick it off and use it in dressing herself. To prepare her for shows, touch her all over with a sponge dipped in fresh cream, and she will clean and polish herself with a striking effect.

A begrimed coat is a source of poor health, and one that is rough and staring is generally the first symptom of disease. Hence, both in hygiene and treatment, attention to the fur is of much importance.

GENERAL REMARKS.—The health and temper of cats are seriously impaired by rough treatment of all kinds. No one can reasonably expect to have a pet that is fit for the drawing-room if it is harassed by dogs and street-boys, or continually teased by pulling its ears, tail and fur; nor, indeed, if it is treated as if it were merely suffered to be in the house, instead of being sought. That an animal is so patient as to allow children to smother it in their aprons and wraps, to carry it over the shoulder by the legs or head, and even to drag it by the tail, is a rebuke to parents who are so unfeeling as to permit such abuse. Her good nature merits some considerations of humanity. Her delicate nervous organism, too, demands protection against pain, fright, and all forms of rough treatment.

DISEASES AND THEIR TREATMENT.

Cats are subject to nearly as many diseases as the human race. But while the diseases of nearly all other animals have been studied with great care, those of the cat have been neglected, except by a few admirers of that animal. Yet there are thousands of people who would highly value any practical information, in order that they might save the life or preserve the health of a loved pet or valuable mouser.

Cats soon show when they are sick. Almost the first symptom is a neglect of their usual toilet. A cat that omits to wash and clean itself is surely ill.

Another prominent symptom is a rough condition of its fur. The hair no longer is smooth and glossy, but appears to stand out straight from the skin.

A hot nose is a pretty sure sign that a cat is feverish or has inflammation somewhere. I shall enumerate the disorders of cats in the order of their frequency, and give briefly the best treatment adopted by others, together with my own experience.

There is no reason why we should not treat the cat and all other animals with the same humanity with which we should treat our fellow human beings. Some physicians and surgeons take offense, or pretend to, if asked to prescribe for a cat or other domestic animal. No physician need feel any loss of dignity in doing a humane act. When a veterinary

physician or some one who makes diseases of animals a speciality can not be procured, the family physician has no moral or humane right to refuse to prescribe. The writer, although an old physician of large practice, never refused such aid, and if the following hints shall enable humane people to relieve the suffering of their pets, he will be sincerely gratified.

When medicine is not given in the food, and is to be administered by hand, it is well to put on thick, stout gloves to avoid bites and scratches.



204. HAFIZ (from a photograph). Owned by the Author.

Then wrap the cat in a strong cloth, carefully covering the feet; let an assistant hold it between his knees, and open the mouth wide. Doses in a fluid form should be given little by little from a spoon. If a pill or bolus is the form, put it well back *against the roof of the mouth*. If tasteless powders or homœopathic pellets are used, it is only necessary to place the dose on the tongue, when it will be absorbed or swallowed. In all cases, be gen-

tle, so as to avoid fright and injury. Studiously clean off from the lips and fur all remnants of the medicine, for the cat will not lick it off if it is distasteful, and its presence will be annoying. It is a good rule to withhold food for two hours after a remedy has been given, unless special directions to the contrary are mentioned in any particular place.

CONVULSIONS.—FITS.

Among the causes of fits the principal is overfeeding with meat, especially when young. Cats should have but a small quantity of meat once a day. The best diet for a cat under one year of age is milk, oatmeal and milk, or plain bread and milk.

Fits are generally of such short duration that but little can be done for instant relief. If they last more than a minute, a whiff of chloroform, ether or ammonia may do good. In order to prevent them from running into the fire or injuring furniture or ornaments in their wild and delirious action, throw a shawl or sheet over them and hold them quiet. The preventive or after-treatment is the most important.

TREATMENT.—The diet must be carefully watched, and if they are fat, put them on a low diet. If they are poor and lean, give them regularly milk and a little raw meat twice a day. If the disorder arises from worms, give santonine (one-tenth grain in milk every three or four hours for two or three days). A cat with fits should be watched, and if her fæces or vomit contain worms, you may be sure that worms are the cause. If the cat is very poor and scrawny, give half a teaspoonful of cod-liver oil three times a day. If the fits are frequent and the cat is rigid, or stiffly convulsed, give nux vomica three times a day (a few pellets or grains of the third trituration, or a spoonful of a solution of one or two drops of the tincture in half a glass of water). If the eyes are red and blood-shot and the head is hot, give belladonna in the same dose as nux vomica.

DELIRIUM.

Cats often have attacks of delirium, which may be mistaken for fits, though there are no true convulsions. The animal is discovered with staring eyes and bristly fur, rushing here and there in a terrible manner. It tries to climb up the wall or break through a window, and ends by plunging into the darkest corner, and mews piteously or screams frightfully. Here it will remain and die unless attended to.

TREATMENT.—Put on a pair of thick gloves or mittens, grasp the cat firmly by the nape of the neck, wrap a shawl around the body, and

with a sharp pair of scissors clip or slit one of the ears slightly in the thin part; then with a sponge or rag wet the ear with warm water to cause the blood to flow, and a few drops will give relief. Give the cat some belladonna or hyoscyamus as directed above, put it in a cool, quiet place, and allow it to sleep. Do not allow it to be disturbed for several hours or a day, for the animal is left in a very nervous state, in which a slight sound will alarm it and bring back the delirium.

When cats are *teething* this delirium often occurs. In some instances the gums ought to be lanced. Feed the cat very sparingly with warm milk, not cream, for a few days. Place within its reach water to drink, and grass to eat.

APOPLEXY.

If a cat suddenly becomes stupid, sleeps heavily and cannot be roused, and breathes with a snore, it has apoplexy. Bleed from the ear a few drops, and give one-tenth drop of opium (laudanum) every half-hour.

INFLAMED EYES.

This is generally due to catarrh or injury. If it arises from catching cold, the eye will be swollen, the inside of the lids red and secreting a mucus which sticks the lids together and runs out of the corners. Give internally some pulsatilla or hepar sulphur. Locally apply a wash of weak borax-water, or a few grains of alum or sulphate of zinc to a teacupful of water.

CATARRH OF THE NOSE.

After catching cold, cats will sneeze and show all the symptoms of influenza. It is often epidemic. When influenza is prevalent among men and horses, dogs and cats are similarly affected. Give hepar sulphur, and if the case is severe, with sore, raw nose and a watery discharge, give arsenic or arsenic iodide, third trituration, or ten drops of Fowler's Solution in a half-teacup of water, a spoonful every two hours.

SORE THROAT.—DIPHTHERIA.

Sore throat arises generally from a cold, and is preceded by catarrhal symptoms. The cat will seem to have difficulty in swallowing food, will swallow when not eating, and the glands of the throat are swollen. Cats

have diphtheria, which they often get from children by whom they are fondled. Give belladonna and mercurius, and wrap the throat up in flannel wet with cosmoline; or tie a strip of pork around the throat. If it is diphtheria, the same treatment will be ample, with a few grains of sulphite of soda in water.

INFLAMMATION OF THE STOMACH.

This is often caused by cats eating food that has been poisoned. If you are sure it is arsenic, give a few drops of peroxide of iron, or dialized iron, every half-hour. The symptoms are constant vomiting and retching, with great thirst. If it is not from arsenic, give a few pellets or a powder of arsenicum, third trituration, every hour or two. If this fails, give a grain or two of sub-nitrate of bismuth, dry on the tongue, every hour. But do not forget that all the symptoms of this disease are often caused by worms, and then nothing but santonine will save life.

DIARRHŒA.

Diarrhœa is generally caused by irregular or excessive feeding, or exposure to wet and cold. Fat meat, or too much liver or oysters will cause it. It soon reduces the cat to a skeleton, and will end in dysentery and death.

If caused by improper food, give pulsatilla and a diet of boiled milk, or no food at all, for a day or two. A few grains of bismuth will often avert it. If it comes from a cold, give mercurius, second trituration. If it is chronic and obstinate, give the following prescription:

R	Tinc. opii,	one drachm.
	Castor oil,	one ounce.
	Aromatic syrup rhubarb,	one ounce.
	Emulsion,	two ounces.

Mix.

Give one-half or one teaspoonful every two hours. In all severe cases of illness, put the cat in an empty room, not too cold, with a warm bed in it, and a box of sand.

DYSENTERY.

Dysentery is an inflammation of the mucous lining of the intestines. It is attended by fever, pain in the bowels, crying and discharge of white or bloody slime, with straining.

Give aconite and mercurius, with colocynth if there is colic. If this fails, use the prescription given above for chronic Diarrhœa. A grain or two of powdered ipecac every two hours will be needed if the discharges are green and very bloody.

BRONCHITIS AND CONSUMPTION.

Cats are very subject to bronchitis, especially pet cats, if they are exposed to cold and wet. It begins with symptoms of a common cold, such as staring coat, shivering, and slight cough. The cat becomes very ill for a day or two with the acute stage, which soon passes into the chronic form. There is then difficulty of breathing; the cat is constantly coughing, with the tongue hanging over the lower lip; she has an anxious expression about the face, and her eyes are watery and filled with matter; she gets thinner and moans about, refusing all food, or at times eating voraciously, with depraved appetite.

Confine the cat to the house, in a warm room; feed her on beef-tea and bread, or milk and arrowroot-gruel. If she is constipated, give a small teaspoonful of castor or sweet oil, and prepare a mixture as follows: In half a glass of water put one drop of Fowler's Solution of arsenic, and five drops of tincture of gelsemium. Give a teaspoonful of this every hour until the feverish or acute stage has passed. If you have homœopathic remedies, give a small powder of arsenicum (third) and six pellets of gelsemium (first), alternately one hour apart.

After the acute stage has passed into the chronic, and the cough is wheezy and frequent, give five drops of syrup of squills every two hours or six pellets of pulsatilla (second), alternated with hepar sulphur (third), two hours apart. In bad cases, with very difficult breathing and painful cough, give a small powder of tartar emetic, second trituration, alternated with six pellets of phosphorus, the third. If the cat is left with a cough, and grows thin and weak, give half a teaspoonful of pure cod-liver oil three times a day. This generally acts like a charm, and the cat soon recovers her strength and flesh.

Consumption often results from neglected bronchitis and needs only good care, freedom from exposure, a diet of raw meat, and cod-liver oil.

DISTEMPER OR YELLOWS.

Lady Cust, writing of diseases of cats, says:—"This is different from distemper in dogs. It rarely occurs but once, and is a dangerous disorder. It begins with constant vomiting of bright-yellow, frothy liquid. Diarrhœa

then comes on, which ends in dysentery." She advises "half a teaspoonful of melted beef marrow, free from skin," and says that one dose is generally sufficient to check the vomiting. But several of my cats had this disease and I treated them all successfully with calomel and ipecac. Put three or four grains of each into half a glass of water, and give a teaspoonful every hour, (or give a small powder of mercurius dulcis, second trituration, and the same dose of ipecac, second trituration, alternately one or two hours apart). Feed them nothing until the vomiting is checked; then give them small quantities of warm milk, to which may be added a little mutton-broth.

MANGE.—RING-WORM.—ECZEMA.

The "mange" of cats is generally a species of "ring-worm" (which they often give to children, or catch from children). It is often a "psoriasis" or an "eczema." The skin becomes red and irritated in spots, where the hair soon falls off, or the skin becomes red, scaly and wrinkled. The poor animal presents an unsightly and even loathsome appearance in bad cases. In all instances the annoyance and irritation make the cat very unhappy, for the itching is intolerable, and her biting and scratching aggravate the disease.

I have been very successful in treating them just as I would a human patient. The diseased surface should be sponged with pure castile soapsuds, and carefully dried; after which, if the disease is mild, apply the following ointment:

℞	Boracic acid (pulv.),	one drachm.
	Almond oil,	two drachms.
	Vaseline,	two ounces.

Mix.

Rub in thoroughly with the finger or soft rag. Repeat this every day and the eruption will soon disappear. In severe cases use an ointment of one drachm of sulphurous acid to one ounce of vaseline (or a wash of one drachm of sulphurous acid to one ounce of water). Nearly all varieties of mange are caused by microscopic fungi in the skin, and when they are destroyed the disease leaves. Carbolated cosmoline has been found useful, and so has an ointment of chrysophanic acid, ten grains to one ounce of vaseline, the latter being especially good in cases of ring-worm.

Internally the best remedy is arsenic, one-tenth of a drop of Fowler's Solution, three times a day, or iodide of arsenic, third trituration, a grain three times a day. Cod-liver oil is useful if the cat is much emaciated, since it readily restores the flesh.

CATS WITH KITTENS.

If you have a valuable and favorite cat pregnant, do not allow her to be pushed about, struck or kicked, or she may miscarry, or suffer during her confinement. Sometimes the kittens are still-born from such ill-treatment. See that the cat is well and regularly fed and properly housed.

When she has kittens, never be so hard-hearted as to destroy all her family at once. There is no other animal that exhibits more affection for its progeny. It will go hungry that its young may eat, and will face the most terrible danger in their behalf. If her children are taken from her, the mother will go about for many days in the most distracted and melancholy manner, filling the house with her piteous mewings. Therefore, be merciful and humane. Always leave her at least one baby until it has reached an age when it can find other food than its mother's milk. If a cat is deprived of all her young, she may suffer from painful enlargement or inflammation of the breasts, which sometimes suppurate. I have known many cases in which this retention of milk acted as it does sometimes in women when delirium and child-bed fever set in; and a cat may be dangerous at such times.

A cat's litter may all be born dead, or may be eaten by some old tom-cat, or any other animal. If no kittens can be procured to nurse the mother, a little camphorated oil or phytolacca cerate should be rubbed on the breasts; if she has fever, give aconite and belladonna (pellets) alternately an hour apart. Sponging the teats with warm water will sometimes cause the milk to flow and relieve the swelling and pain.

If the mother dies and you wish to raise the kittens by hand, give them a little new milk sweetened with brown sugar. As a substitute for the mother's licking, rub them with a sponge, squeezed out nearly dry after being dipped in warm water that is a little soapy.

BRIEF MENTION OF VARIOUS AFFECTIONS.

BOILS.—Several of my cats have had an eruption like boils, probably from over-feeding. They need but little treatment, and measures for promoting the general health will be sufficient.

Pox.—In the spring and autumn cats are frequently afflicted with a disease resembling *chicken-pox* in the human subject. The head and throat are the parts usually attacked, the hair falls off, and the animal's appearance is very miserable. Give hepar sulphur, third trituration, a few grains on the tongue every three hours, and apply the boracic-acid ointment mentioned under Mange.

FLEAS.—In some countries and towns cats are terribly annoyed by fleas. They are readily removed by a few applications of Persian Insect Powder, rubbed into the fur.

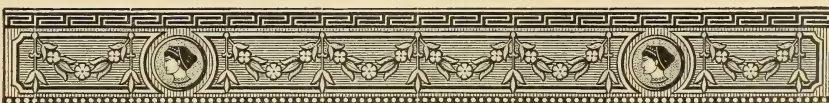
INJURIES, ETC.—Cats stand operations of all sorts very well. If a leg is broken and lacerated by a trap, and cannot be set and put in splints, cut it off. Leave sufficient flesh to cover the bone, and have ready a wire raised to *white* heat, to cauterize and stop bleeding; then bring the flesh together by a needle and thread. If the wound has been made with a knife or the teeth of some animal, sew it up. If an ulcer forms from any cause, touch it with some caustic or burned alum. Cats will persistently lick a wound or ulcer. In some cases it will be well to let them. In others it defeats healing. A fine wire muzzle is the only preventive.





PART VIII.

POULTRY AND LARGE BIRDS.





205. SKETCH OF A COCK.

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|--------------|--|----------------------------|
| 1. Comb. | 9. Saddle-hackles. | 16. Primaries, or flights. |
| 2. Face. | 10. Sickles. | 17. Point of breast-bone. |
| 3. Wattles. | 11. Tail-coverts. | 18. Thighs. |
| 4. Deaf-ear. | 12. True tail-feathers. | 19. Hocks. |
| 5. Hackle. | 13. Wing-bow. | 20. Legs or shanks. |
| 6. Breast. | 14. Wing-coverts, the "bar." | 21. Spurs. |
| 7. Back. | 15. Secondaries, lower ends forming the wing or lower butts. | 22. Toes or claws. |
| 8. Saddle. | | |

PART VIII.

POULTRY AND LARGE BIRDS,

INCLUDING

CHICKENS, TURKEYS, DUCKS, GEESE. AND OTHER DOMESTIC FOWLS.

BY H. H. STODDARD, ESQ., HARTFORD, CONN.,

Editor of *The Poultry World*, *The Poultry Post*, and *The American Poultry Yard*;
Author of "How to Feed Fowls," "How to win Poultry Prizes," "An Egg Farm," etc., etc.

INTRODUCTION.



HE rapid growth of poultry-interests in America and the consequent increase in the financial value of the stock have made a practical treatise on the diseases of fowls a pressing need. Feelings of mercy, to say nothing about self-interest, should prompt one to seek relief for his suffering flocks, but many find themselves helpless in the absence of a reliable guide. The family physician can give no advice, even if his services did not involve too great an expense, for the subject lies outside of his field. Nor does the domain of the veterinary surgeon adequately cover this ground. The poultry-raiser must therefore be his own counselor. He is, however, generally limited to the advice of equally uninformed neighbors, and to stray clippings from newspapers which are as useless as the large class of specifics for human ills which the paragraph-hunter commits to the columns of the same papers.

During many years of practical poultry-culture and an exhaustive study and publication of literature pertaining thereto, the writer has kept in mind this deficiency in domestic works and has reduced the fruits of his experience to an accessible form, together with such reliable information as he has gleaned from intelligent and trustworthy breeders and dealers. He confidently believes that a rational use of the following pages, even by those of little or no experience, will result in the saving of many valuable lives

and the relieving of a great deal of the suffering which has too often been met by a fateful waiting for the course of nature to bring about a doubtful cure or certain death. The successful treatment of one pure-bred fowl will be an ample reward for the study required by this entire treatise. The omission of technical and undefined terms is a prominent feature and, being a constant aid to the reader in his investigations, will be highly appreciated.

The common fowl is taken as the basis of this work, but the remarks are to be applied to other fowls when a given disease is common to them. Some disorders, however, which are peculiar to one species receive separate mention and treatment when they seem to demand it.

HEALTH OF POULTRY.

The old adage "an ounce of prevention is worth a pound of cure," applies as well to the present subject as to others. Most diseases of poultry may be prevented by a proper observance of hygienic regulations in regard to food, shelter and general care, and the brief remarks upon health will be among the most valuable that can be made.

The Coop and Yard.—It is all-important that over-crowding be avoided, since it is a prolific source of destructive epidemics in fowls no less than in man. They require a rapid change of air, as they are otherwise subjected to influences which favor the development of the germs of disease. A flock of twenty-five chickens, or a less number of larger fowls, should be provided with a coop having an area of at least one hundred and fifty square feet, though a lot of an acre will be a large enough run for four times that number. It must not be assumed that the flock can be increased at will if only a corresponding addition to the space be made. It is prejudicial to keep larger numbers together, since the damaging effects of the exhalations, droppings and impurities of the air can not be counteracted. The separation of a large flock into divisions, with a reasonable space between them, is necessary to the well-being of poultry.

Sandy or gravelly soil is the best for the fowl-house. To secure a dry floor, it is best to raise an artificial mound of earth on which to locate the building. If convenient, you may put in broken bricks, stone and other clean, permanent refuse, covering it with some inches of gravel and sand, and finishing with sandy or loamy soil, beaten down firmly and smoothly to insure ease in cleansing. Heaps of fine coal-ashes or sand should be kept in some part of the inclosure as a suitable place for the fowls to dust themselves. Finely pulverized clay or loam is also excellent material for this purpose.

The location should be well drained. Even for ducks and geese that

are kept confined it is important that the requisite water be afforded without incurring the disadvantages of low, damp, ill-drained, stagnant, or heavy, clayey soil. It is desirable, of course, that the inclosure for water-fowls be located on the brink of a natural body of water, but in the absence of this, an artificial font or pond may be made.

When perches are required, as for chickens, turkeys and Guinea-fowls, they should be so arranged as to be out of the way of the droppings and not so high from the ground as to injure the birds, if fat and clumsy, when flying down from the roost.

Light and Ventilation.—Light is absolutely essential to health. If possible, the shelter should be so constructed that every nook shall occasionally be exposed to the action of direct rays of the sun. Caution is requisite in this, however, as in most other good things, and shade should be provided so that the fowls may resort to it whenever they are disposed, particularly in hot weather.

In consequence of the unusually active circulation and respiration of fowls, deleterious exhalations are rapidly thrown off and remain in the air in invisible but poisonous particles. It is, therefore, imperative that every corner and cranny of the apartment be within reach of freely-circulating air. Yet equal precautions should be taken against excessive wet and too sudden colds, for fowls will take cold in a draught as well as human beings, particularly at night. A cool house, perfectly ventilated, without direct draughts, is desirable in this matter. In some seasons a poultry-house should have as limited walls as practicable. In summer a roof is all that is needed. Twine or wire netting makes a good partition.

Cleanliness.—The marked tendency of filth to induce epidemics emphasizes the demand for strict cleanliness. In the eradication of exhalations and insects the attention must not be confined to the housings. The yard should be changed at times, if possible, and should, at any rate, be treated as here directed, while strict measures are taken with all outdoor roosts. Dry earth, such as dust in the highways of the country and small towns (in cities it contains too much offensive matter), should be spread on the bottom of all inclosures to catch and disinfect the droppings. Of rather less merit are coal-ashes, dried muck, land plaster and powdered gypsum. Before the accumulation becomes offensive, or even very copious, the whole should be removed and stored away, it being a superior fertilizer. At regular intervals the ground of the poultry-run should be spaded up several inches deep, the dirt being used for the garden, and the soil being replaced with a fresh supply. When the poultry-yard is extensive, plowing will obviously be more economical than spading. Remember that the soil will tenaciously hold the germs of disease.

Even more deleterious than the effluvia from the droppings are the organic exhalations from the lungs and skin which adhere to the walls, nests, perches, and other exposed surfaces. Whitewash should be frequently spread upon such surfaces and the nests be often furnished with new bedding. Diluted carbolic acid, an ounce to a gallon of water, is an excellent purifier. It should be sprinkled everywhere in the apartments, and may be left to evaporate from cloths. It is often allowed to stand in open vessels, but caution should be taken to keep it away from the flock, since it is an active poison. Such danger may be avoided by hanging up by the neck a bottle containing it, with the cork removed.

Fumigation is a superior protection against disease, and is especially valuable for the removal of lice. It may be applied in various ways. The fowls being removed, place in the house a vessel containing sulphur, put a red-hot iron in it, and closely shut all openings for some hours. Rosin may be advantageously added to the sulphur. Gas-tar, or that made from pine or coal, is a reasonably good substitute for the sulphur; though shavings wet with carbolic acid and burned in a similar way will be better.

Removal of Lice and Mites.—When lice or red mites are present—the rapacious pests which suck the blood and juices of so many fowls, reduce the system, and often destroy life—remove and burn all straw and other litter, take out the perches and char them, with all the wood-work. This use of fire may be made more thorough by first carefully smearing the materials with refuse grease, but the strictest pains are requisite to prevent complete destruction. If the coop is not too valuable, it is well to wholly destroy it. Slaked lime, put in all the cracks and corners, has some efficacy. A good additional measure, and one that is often alone sufficient, is the washing of all parts with a lotion made of one pound of potash and a quart of water, followed with a copious application of kerosene oil. The droppings furnish a favorite harbor for such insects, and they should be removed, with several inches of the dirt, as directed above, and be applied as manure to a garden or field, and plowed under.

Food and Drink.—In the present instance, when considering the particular question of health, our remarks will be rather of a negative character, treating mainly of such articles as are undesirable. Whole corn in hot weather is unhealthful, as are also damaged grains, tainted meats, all putrid offal, and excessive amounts of meat, particularly when raw. A too sudden increase of green food induces diarrhœa, though it does no harm if kept constantly before the fowls. Peas, beans, pulse and malt are too stimulating. Over-feeding leaves imperfectly digested material in the blood and thus favors general disorder, and irregular feeding is always prejudicial.

Pure, cool, fresh water or milk is the best to drink. Foul, stagnant, and impure water of every kind is to be avoided, as it has an injurious influence upon the whole digestive system, with a peculiar tendency to produce or invite diarrhœa, cholera, and the like. Even rain-water is sometimes made unwholesome by an exposure of twenty-four hours to the air, a fact which calls for a frequent change of water.

The main object in poultry-raising being to supply the table with meat and eggs, it is strange that so little pains is taken to guard the food and drink. If the flock is allowed to eat and drink any and every thing that is within reach, the flesh and eggs will be as certainly vitiated in quality as that the milk of the cow is tainted by the use of improper food. Still further, if poultry eat the flesh, blood, milk, urine, or droppings of cattle or other animals which are suffering from malignant diseases, such as anthrax and foot and mouth disease, the flock will be afflicted with the same or similar diseases, with the alternative risk of dying or imparting the malignant affection to those who eat their flesh and eggs.

Miscellaneous Notes.—Among the miscellaneous sources of injury to health may be mentioned nervous excitement incident to public shows, a boisterous manner of an attendant about the inclosures, the trepidation incident to catching, the approach of hawks, dogs and other animals. Such fright and confusion should be sedulously avoided. Too close confinement tends to general disorder and is favorable to the development of feather-eating and other vices. Blooded animals are more often subjected to such confinement than others. Hot weather long continued lowers the tone of the system and thus exposes the fowl to debilitating affections of the bowels in particular. Excessively dry weather is also weakening, and severe cold is unfavorable to the enjoyment of normal health. Skin diseases are engendered by snow lying on the ground a long time, perhaps because it deprives the fowls of their chances for dusting, when the indoor dust-box is lacking. The presence of a too vigorous male partner may cause debility in the female and interfere with the maturing of the egg. The unusual demand made upon the digestive organs during the period of moulting, in consequence of the growth of the new feathers, calls for special treatment, and such is given in the pages devoted to diseases. The general "running-out" of a flock in the barn-yard, as well as in the inclosure of the fancier, is doubtless often due primarily to in-and-in breeding, by which one family that is kept alone declines by an invariable law of nature. Though apparently favorable results may be experienced for a time, the inevitable degeneracy will eventually become manifest.

INVESTIGATION OF DISEASE.

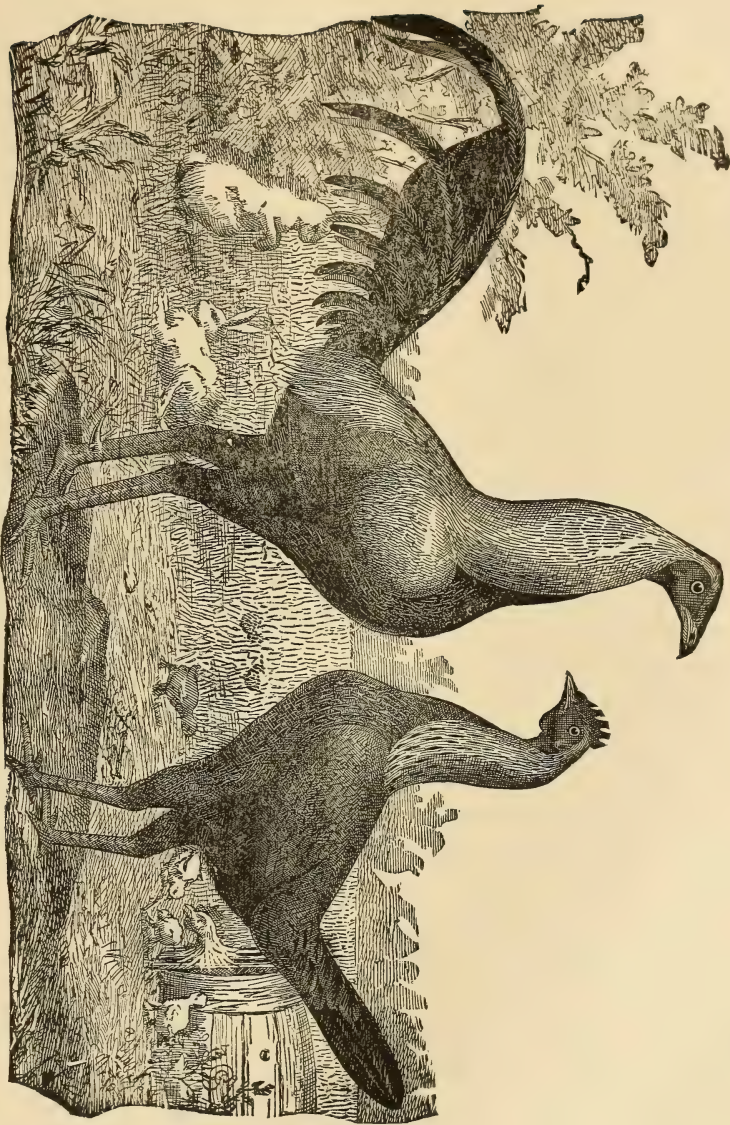
"What is the disease?" is the first and most important question to ask. The number of people who fatefully assume from the beginning that the answer to this question is beyond their reach, is inexcusably large. If the non-professional reader would apply even a limited allowance of study and common sense, many of the less important ills might be avoided, and many others be successfully treated. A little special instruction is here given to enable one to detect a disease before it is too late, and thus to avoid, in a great measure, those disheartening ravages which at times come upon the uninformed owner of fowls. The small number of diseases which are liable to be mistaken makes it comparatively easy to form a right conclusion, for it will not take long to read the symptoms mentioned under all of them, if necessary, and thus arrive at the truth by exclusion, by learning that "it is not this," "it is not that," and so on.

A general knowledge of the organism, habits and appearance of fowls when in health is, of course, very desirable. A reasonably close observation is about all that we can expect in this matter from the ordinary owner of barn-yard poultry. The experienced fancier adds to this a frequent handling and more detailed study, to learn the normal hardness and suppleness of the flesh, the warmth, moisture and color of the skin, especially about the vent, and the outline and structure of the skeleton. It is also eminently desirable that one know what is a right condition of all the organs, but this is particularly true in respect to the liver and other digestive organs. Such knowledge can be gained only when a well fowl has been killed.

One of the most common mistakes in the discovery of a disease is the forming of a decision after too little study. Finding one or two symptoms which are known to attend a suspected ailment, one is prone to jump at the conclusion that he has detected the real difficulty, when a further investigation would reveal these symptoms, in conjunction with others which would lead to the true conclusion. Every examination, therefore, should be thorough, until a degree of certainty is felt. It is essential, too, that the reader do not expect that a disease will always present just the symptoms mentioned in any book, for they will vary more or less in different fowls, and even in the same one at different times—a caution which merely calls for the exercise of judgment and common sense.

When any doubt is felt upon the contagious nature of a disease, the affected animal should be removed from the flock until the possible danger is past. When a bird dies from an unknown cause it should be opened and the condition of the internal organs be noted, along with a study of their condition as represented in the following pages of treatment.

206. GRAY GAMES.



In general, it may be observed that the presence of lice and mites is often the cause of weakness and loss of condition, and that a search for them will be all that is necessary in many perplexing cases.

Some diseases of little moment are mentioned in this work, as well as some of very rare occurrence, so that the field might be exhaustively covered. It may be objected that too many remedies are recommended, but it will be seen that they are often mentioned as alternatives, in recognition of the fact that one may be at hand when another is not. Any technical terms that may be found in these pages will be defined in the context, or by the cut on page 866 and the accompanying definition of "points."

PRECAUTIONS IN SICKNESS.

When fowls are sick they should be removed from the flock to avoid annoyance from others. If the disease is of an epidemic nature, as roup, cholera and the like, a temporary hospital should be made, and be destroyed when it is no longer needed. In cases of the two disorders just named, such a hospital should be more airy than usual. If the quarters used in these malignant diseases are not destroyed, they should be thrown open and subjected to extreme cold, or be closely shut and raised to a degree of heat at least as high as 150° Fahrenheit; for which purpose a stove can be used. Boiling water dashed in large quantities on all parts will also be useful. Other measures recommended above for exhalations and insects may likewise be adopted to secure a thorough cleaning of the place.

REMEDIES AND HOW GIVEN.

For the sake of completeness and ease of reference, the requisite directions for medicines and doses are given just as they are needed. A few observations are here made upon the particular effects produced by some leading remedies, with the best methods of administration.

Special Mention of Remedies.—Cayenne pepper, asafoetida and gentian act as stimulants on the digestive organs. Do not buy the pepper that is adulterated or has otherwise lost its properties, and do not give it long at a time, nor in such large quantities as to make it distasteful. Ale is a good general stimulant. Garlic, onions and asafoetida favor a healthy action of the breathing-organs. The best known tonic is iron, a few drops of the tincture being administered in the feed, or a few rusty nails being put into the drinking-water.

Another excellent tonic is the "Douglass Mixture," made as follows: Dissolve a pound of copperas (sulphate of iron) in two gallons of water, and thoroughly stir into this an ounce of oil of vitriol (sulphuric acid).

Keep it in jugs and, for general use, an ounce of it may be put into a gallon of drinking-water, smaller quantities in the same proportion. It may be so given every alternate day. Two gallons are named on the supposition of a large flock. For a smaller one, and for a large one in hot weather, a less quantity should be made.

"Chicken Powders" are also superior as a tonic, and are made of equal parts of copperas, cayenne pepper, sulphur and rosin, pounded together and well mixed. Give two or three teaspoonfuls four or five times a week to each dozen fowls.

Charcoal purifies the digestive organs by absorbing offensive matters, and thus stimulates their action. The flock can be taught to eat it by adding a little in a powdered form to the soft food, and it will afterward be taken as the system demands it if it is kept before the fowls in bits as large as grains of corn. When given in the food as a powder, care should be taken not to put in too much, lest the system become clogged with it.

Sulphur is a valued drug, but it should be used with some caution. It has often produced injurious or fatal effects in external applications to young chickens, perhaps more often when mixed with lard. It will also do harm to the eyes, and even produce blindness, if it gets into them. There is danger of its adulteration with sulphuric acid, and when sold in the form of powder it should be washed well in hot water, which will remove the acid without dissolving the sulphur. When it is applied externally, the fowls should be kept out of the wet for a day or two.

Lime-water is used for several purposes and is prepared by slaking four ounces of good lime in a little water, and then adding enough water to make a gallon. Let it stand a few hours, pour off the liquid, and save the lime for use in making the preparation at another time. Lime-water is useful in both health and disease.

Doses and Administration.—When one is in doubt about the proper size of a dose for a fowl, he should ask a druggist or physician what is the regular amount for a child. Give to a chicken two weeks old as much as is appropriate for a child of six months; to one of six weeks, the dose for a child of a year; to one half-grown, that for a two-year-old child; to one full-grown, what is needed for a child of three or four years. It will thus be seen that fowls require large doses for such small animals.

When medicines are not taken in the food or drink and are to be administered by hand, they are most easily given in solutions. Pills and other solids will be swallowed if placed far enough back in the mouth. Such manual administration can best be effected by taking the fowl in the lap and holding it with the left arm, while the mouth is opened with the left hand and the medicine is thrust down with the right. In doing this, the

head should be kept in the position naturally maintained in drinking, the neck being outstretched and the beak pointed upward.

In making the dose, the following tables will be serviceable:

DRUGGISTS' WEIGHTS.

20 grains	make	one	scruple.
3 scruples	"	"	drachm.
8 drachms	"	"	ounce.
12 ounces	"	"	pound.

DRUGGISTS' FLUID MEASURES.

60 minims	make	one	fluid	drachm.
8 fluid drachms	make	one	fluid	ounce.
16 fluid ounces	"	"	"	pint.

These weights and measures are not in the possession of many people, and rougher methods may be used with safety for some of the less potent and less poisonous remedies. For example, a teaspoonful is considered equivalent to one fluid drachm; a tablespoonful, to a half fluid ounce; a wine-glassful, to two fluid ounces. So, also, sixty drops of water are accounted a teaspoonful, or fluid drachm; one hundred and twenty drops of alcohol and the tinctures also pass for the same bulk; while a like number of drops of oils and syrups make a much larger proportionate measurement. Such indefinite equivalents should obviously not be accepted when using strychnine, aconite, colchicum, arsenic, tartar emetic, laudanum and other poisons, while scarcely less caution is needed in measuring kerosene oil, sulphur, mercurial ointment, carbolic acid and other dangerous drugs. It may not be out of place here to drop a special warning against leaving any poison, as rat's-bane, arsenic, Paris green, and the like, within the reach of poultry.

General Remarks.—It is of the utmost moment in domestic practice, in every department, to use judgment and calm good sense. A disease may appear in any of a variety of degrees of severity, and no rule can be given about the dose that will precisely apply to all cases. The reader must, therefore, increase or diminish the size and frequency as the age of the animal and the malignancy of the case in hand may dictate, restrained by the caution in the maxim that domestic treatment is generally over-treatment, medicines being usually given too freely.

DISEASES AND THEIR TREATMENT.

CHOLERA.—HEN DISTEMPER.

Though this disease is of comparatively recent appearance, it is the most dreaded of all the maladies which afflict poultry. Its nature is perhaps malarial, and it is certainly epidemic and highly contagious. Owing, however, to its obscure origin and character, any disorder that is not understood is quite likely to be called cholera.

Causes.—It is caused, or at least promoted, by over-crowding in the coop (though it invades flocks which have extensive runs), and its development is favored by filth, unwholesome and irregular feed, exposure in damp, malarial localities, stagnant drinking-water, extremes of heat and dryness, and other unfavorable conditions mentioned in the opening remarks on health. It attacks fowls of all ages, but more readily the older ones, and the very large and high-fed are especially liable to become its victims. It is a well-grounded suspicion that the droppings contain the germs of the disease, and some confidently maintain that it is the sole medium of its infection. It is certain that special pains should be taken to remove them and render them harmless by carbolic acid or, still better, by covering them deeply with the plow.

Symptoms.—Owing to the liability of confusion with other diseases a special study of the following symptoms is of the first moment. The fowl at first becomes weak, sometimes extremely so, staggers, and perhaps falls; is dejected, sleepy, moping, and does not plume itself; has much thirst and fever; gapes frequently; discharges from the bowels, mild at first, become yellowish-green or like sulphur and water, growing thinner, greener and frothy in the later stages, causing increased prostration, and persisting until death in fatal cases; the skin about the vent perhaps very red, with black spots; the animal may be "tucked up" with cramps; the crop fills with wind and mucus, making the breathing fast and heavy; the fowl finally fails to digest its food; the eyes are closed a few hours before death. Among the later symptoms is the change of the comb and wattles to a pale or dark hue. If the bird is opened after death, the liver will be found enlarged, congested, full of dark blood, show a dark-green color, and be so tender that it can be easily crushed with the fingers; the gizzard will be more or less softened, often much contracted, and be filled with dried or greenish food; the crop and intestines will perhaps be filled with sour, fermenting food and mucus, possibly ulcerated, the intestines being much inflamed; the blood will be darker and thicker than usual; the lungs and other organs

will be engorged with blood; the heart enlarged; the testicles more or less changed.

TREATMENT.—Treat promptly in the beginning. Remove the whole flock at once to *clean* quarters, if possible, affording a dry, gravelly location not previously used, and provide healthful housings. Separate the sick and suspected from the others and give to each, if practicable, a place by itself. Such isolation is desirable even for such as are supposed to be well, to prevent a spread of the scourge. In general, observe as strictly as the circumstances will permit, the directions previously given for “Health of Poultry” and “Precautions in Sickness.” These measures will tend to reduce the percentage of deaths, but the saving of all the flock need not be expected.

Fowls which are too sick to eat should have every four or five hours a pill made after the following formula of Dr. Dickie: Blue mass, 60 grains; pulverized camphor, 25 grains; cayenne pepper, 30 grains; pulverized rhubarb, 48 grains; laudanum, 60 drops. Mix and make twenty pills. After three or four pills have been taken, give to each bird half a teaspoonful of castor oil and ten drops of laudanum. Give a scanty drink of scalded sour milk, with the Douglass Mixture (see page 874) added in such quantities that twenty-five fowls will get a gill of it per day. It is also well to add a little tannic acid to the Douglass Mixture. Allow no other drink. The one here mentioned is recommended even if the pills are not used. If the evacuations from the bowels become darker and of a firmer consistence, as they should under this treatment, give a drink of alum-water, or strong oak-bark tea, but no other, being careful not to make the change unless such a condition of the droppings has ensued. The latter drink tends to check the discharges.

It is evident that the pills prescribed above are pretty “heroic.” Another meritorious remedy, especially in the earlier stages, or at any time when the crop remains full, is made of ten drops of strong tincture of eucalyptus globulus, five grains of common salt and half a teaspoonful of ground pepper, forcing it down in a tablespoonful of water (PARKER).

One writer vouches for the efficacy of the following:—Powdered garlic, one ounce; tincture of capsicum, two drachms; tincture of camphor, two drachms; tincture of rhubarb, a half-ounce; tincture of opium, one drachm; tincture of the oil of peppermint, three drachms; all well mixed and then shaken so that the garlic does not settle, the dose being six to eight drops in a teaspoonful of water three times a day.

Since one flock responds to a given treatment more readily than another does, we make mention of other remedies which have been tried with more or less success. Take equal parts of red (or cayenne) pepper, alum, rosin

and sulphur, mix well and put into the food once a day, a tablespoonful to three pints of scalded meal. Another remedy: Two tablespoonfuls of epsom salts, four of lime, and ten drops of tincture of iron, put into a gallon of meal. Again, coal oil is highly recommended, a few drops being put into the food, and is well worth a trial. The simple treatment of confining the fowls to a stiff paste of flour and water is of questionable efficacy, though it doubtless tends to lessen the rapidity in the action of the bowels, and, since it will thus retard the prostration, the paste may be used as a part of the food.

To well fowls, and those slightly affected, give in the food a little sulphur, soda, cayenne pepper and tincture of iron, a different one each day, and add carbolic acid or fluid carbolate to the drink. As food for both of these classes good authority favors warm boiled potatoes mashed up with bran (or wheat, oatmeal, or barley meal) and sour milk, mixed with a little pulverized charcoal and bicarbonate of soda. If the Douglass Mixture is added to the food, it will have a good effect on the well birds. As a preventive, nothing has been found that is better than coal oil, or kerosene, which may be given by soaking grain in it several hours before feeding it, or by mixing a tablespoonful in a half-gallon of cornmeal. Powdered charcoal in small quantities, put into the feed, will have a favorable tendency. For obvious reasons lice and mites should be kept away, the food be digestible and regularly given, the surroundings be absolutely clean, and all hygienic measures be observed to keep up the tone of the system.

ROUP.—CROUP.—ASTHMA.—YAWS.

Roup is the second of the two most dreaded diseases of fowls and is, therefore, given the second mention. It is a highly contagious malady which first affects the lining membrane of the beak and then extends to the eyes, throat and whole head, eventually involving the entire constitution. According to its more manifest symptoms, it has been called diphtheria, sore head, swelled eyes, hoarseness, bronchitis, canker, snuffles, influenza, sore throat, quinsy, blindness, and by other names, though some of these are hereafter treated as separate diseases. It attacks all ages, but the older birds more readily. It occasionally kills young ducks and turkeys.

Causes.—Filth, poor shelter, bad food, indeed anything which reduces the tone of the system will favor the development of the disorder. Exposure to wet and cold, and neglect of slight diseases of the nose, mouth, and air-passages are prolific sources of the ill or at least conditions inviting its appearance. It follows from the last remark that prompt attention to other less malignant disorders may prevent much trouble and save many

lives. It is contracted by a well fowl coming in contact with a sick one, or with the discharges from the eyes, nose and mouth, whether at the drinking-place or elsewhere. The effluvia arising from the droppings is an active provoking cause. If the discharge gets into the human eye or on any break in the skin, it may produce serious inflammation, a fact which makes it necessary to use great caution in handling the affected animals.

Symptoms.—These develop either slowly or rapidly, beginning with the general signs of a bad cold in the head, such as wheezing, coughing or sneezing, high fever and great thirst. The discharge from the nose and eyes is yellowish, being at first thin but growing thicker, opaque, *very offensive*, and clogging up or even closing the eyes, nostrils and throat; these parts and the whole head are swollen, sometimes enormously, so that blindness ensues, making the fowl unable to get its food, and thus hastening the decline of the system; pustular sores form about the head and in the throat, discharging a frothy mucus; the breathing is impeded; the crop often swells; the comb and wattles may be pale or dark-colored; during the course of the disease the fowl is feeble and moping. A fatal case terminates in from three to eight days after the distinctive roup-symptoms set in, and those which are not treated when an epidemic is prevailing will generally be fatal. Upon opening a dead fowl one will find the liver and gall-bladder full of pus, the flesh soft, of a bad odor, and, particularly about the lungs, slimy and spongy.

TREATMENT.—It is of the highest importance that treatment begin as soon as the first symptoms appear. To detect the approach of the disease—and any bird in the flock should be suspected if one has been infected—raise the wing and ascertain whether the feathers beneath it are stuck together by the discharge from the nostrils during sleep. Keep a close watch on the nostrils and relieve the slightest clogging. At night visit the roosts with a lantern and listen particularly for evidences of obstructed breathing. Remove at once from the flock all infected and suspected fowls, putting each by itself if practicable. Rigidly observe the directions about cleanliness, disinfection, the removal of droppings, and other particulars which have been given for cholera. Take particular pains to keep the discharge out of the reach of well fowls, especially by the purification of drinking-vessels and other tainted objects; for which purpose carbolic acid will be a valuable agent. Give to the sick fowls warm, stimulating food, with some cayenne pepper. Onions will have a good effect if chopped fine and mixed in the feed. Provide warm, dry, gravelly or sandy shelter. The well fowls, too, should have absolutely wholesome food and housing. No remedy can be relied upon to cure all cases of malignant

roup, but either of several will often be found measurably successful. A teaspoonful of castor oil is advisable in the beginning. No other medicine yet tried has been as good as the German Roup Pills, and they will cure when anything can. Along with them give as a stimulant three pills daily, as large as a pea, made of mustard and ground ginger. Also give pepper-tea as a drink, as strong as for a human being. There is high authority in favor of giving three pills a day, as large as the fowl can swallow, made of equal parts of pulverized sulphur, powdered charcoal and new yeast, with some such stimulant as is mentioned above. In all cases, put a little powdered charcoal in the feed. When the disease persists for several days, repeat the castor-oil purge recommended for the beginning.

Attention to the eyes, nostrils and face is absolutely essential. Wash the head thoroughly with a solution of chlorate of potash and warm water, equal parts, until the eyes and nostrils are opened and clean. Labarraque's Solution of Chlorinated Soda is a still better wash, one part of it to two of tepid water, and it should be used several times a day if the discharge is excessive. Pure castile soap and warm water make another good wash. When the discharge from the nostrils is excessive, it is advisable to inject into them camphorated sweet oil, either through the external openings, or from the inside through the slits in the roof of the mouth. For the last operation, the small oil-can used about the sewing-machine will be convenient. Nitric acid is sometimes applied to the nostrils with a feather two or three times a day, the old scab being removed each time. If the throat is clogged with secretions, clear it out and apply the Chlorinated Soda before mentioned with a camel's-hair brush. When the throat is swollen, relief may be afforded by painting it with a weak solution of lunar caustic (nitrate of silver), and putting into the drink ten drops of a solution of equal parts of sulphite of magnesia and carbolate of lime. Difficulty in breathing may be relieved in any stage by steaming; for which purpose hold the head in a vessel containing scalded bran, still steaming, closing a cloth neatly around the head to prevent the escape of the steam at the sides, being careful not to keep the fowl in this position so long at one time as to suffocate it. A hot stone in vinegar would be an excellent substitute for the scalded bran, and, indeed, some vinegar in the bran would be serviceable. If patient bathing and steaming do not reduce the swelling in the eyes, it may be necessary to open the tumor with a sharp knife and remove the deposit. When the fowl is blind, so that it cannot eat, the food should be put within its reach, or even brought to its mouth, and always be so soft that the soreness of the throat shall not prevent swallowing.

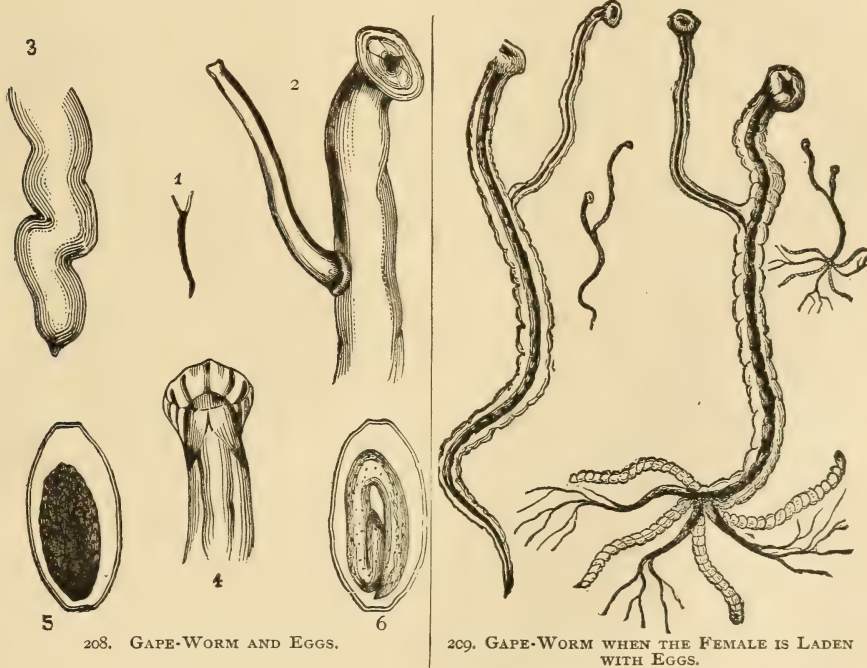
When the fowl has recovered, keep it away from the flock some time and give it for several days a tonic, as tincture of iron, or rusty nails in the

drink, or cayenne pepper, garlic, asafœtida, gentian or onions in the food. The Douglass Mixture (see page 874) is among the best of tonics.

GAPES.

Chickens, turkeys, ducks and other domestic fowls, as well as many species of wild birds, are subject to a disease which is known by the general name "gapes," so called from the chief and universal symptom.

Cause.—The cause of this destructive malady is the presence in the windpipe of a pale-reddish worm, popularly known as the gape-worm.



The female is about five-eighths of an inch long, having a diameter of one-thirty-fifth of an inch. The male is one-eighth of an inch long, with a diameter of one-fiftieth of an inch, and is always attached to the female as a short branch, so that the two present the appearance of a single forked worm. The head of the female is much larger than that of the male, and is supplied with six lips. Of the accompanying illustrations in 208, 1 shows the two sexes together, natural size; the upper part of the same highly

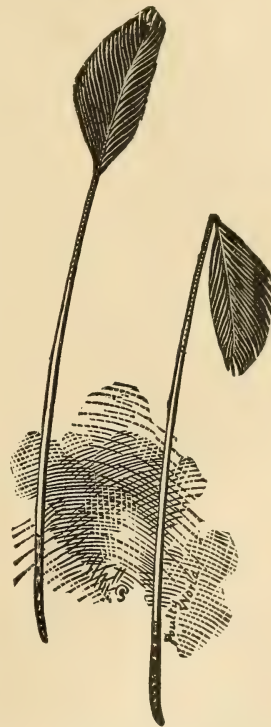
magnified is represented in 2. The tail of the female is shown in 3, this particular one illustrating a marked instance of the general tendency of this part to turn up in folds. The tail of the male, terminating in an extended cup or sucker, by means of which is effected the union with the female, is shown by 4; 5 is one of the eggs, while 6 is the same with the embryo far advanced in development. All of these except the first are much magnified.

This worm is very prolific in the generation of its young, and produces them by depositing eggs either directly in the windpipe or in the food, drink, droppings, soil, or other places from which they can be introduced into the throat. The cuts in 209 exhibit the gape-worm when the female is heavily laden with eggs, which are best seen on the jointed branches. The second and fourth are life-size, the first and third being the same highly magnified. The eggs will retain their life through much severe exposure and harsh treatment, and their small size (about 1-250th of an inch in their greatest diameter) shields them from notice. Indeed, it is believed that even the lice carry them on their bodies to the fowls, and this view perhaps sufficiently explains the facts from which some have concluded that the gape-worm is one of the forms assumed by the louse. The disease occurs oftenest in midsummer, in unthrifty birds, or in those which have filthy quarters and unwholesome food and drink. It is most common in young birds, though the older ones are not entirely exempt. It prevails especially on premises where large flocks are kept.

Symptoms.—Constant gaping is the distinctive symptom, and is attended with difficult breathing, wheezing, coughing, unsuccessful attempts to swallow, drooping, and if not arrested, general debility and death. Every instance of gaping must not, however, be assumed as a case of real gapes, for it may arise from mucus or other obstruction in the throat, or from "crop-bound." The experienced observer will detect the ailment by the difference in severity of the symptom. Yet the treatment detailed below may be safely followed.

TREATMENT.—This aims at the removal and destruction of the worms in the windpipe. The easiest and most certain treatment consists in putting some clear, transparent carbolic acid into a spoon or iron saucer and holding it over a lamp until dense white fumes arise, the fowl's head being held in these fumes until it is nearly suffocated. A number can be subjected to this treatment at once by putting them into a close box in which the fumes are generated, but extreme care will be necessary about continuing it so long as to kill them. The fumes of sulphur, similarly applied, are a good substitute, as is also the vapor arising from heated spirits of turpentine or creosote.

Another excellent treatment is to strip a feather of the web, except more or less of the tip, according to the size of the patient, dip it in turpentine or kerosene oil, thrust it into the windpipe and turn it around several times before withdrawing it. Some of the worms will come out with it, others will be killed, and still others will be immediately coughed up. In whatever way they are removed, they should be caught on a paper and burned. The same treatment in substance may be effected, with more certainty of removing the worms, by stripping a feather as just directed (leaving about three-fourths of an inch of the web for a chick of two to six weeks), bending it down, without breaking or cracking it, just below the web that is left, so that it will make a smooth, sharp angle that can be easily thrust into the throat. The accompanying cut shows the feather before and after it is bent. While an assistant holds the patient, open the beak with the finger and thumb of one hand, take the quill in the other, dip it in a solution of three parts of spirits of turpentine to one of water, and thrust the sharp angle into the windpipe as far as it will go, twist it rapidly around, meanwhile drawing it out. A worm will almost surely come away with it. Repeat the operation three or four times to effect a cure, burning the worms that are removed. Care must be taken to insure the insertion of the feather into the windpipe, not into the gullet. Thrust it down through the opening which an examination will reveal in the middle of the tongue. The size of the feather should be carefully adjusted to the fowl, being large enough to fill the windpipe pretty closely. Mr. T. Conner, in recommending this method, says he "never failed to cure the worst case of gapes in this way." Good results may be expected if the feather is dipped into oil, salt-water, a weak decoction of tobacco, or a weak solution of carbolic or sulphurous acid, instead of the turpentine. A horse-hair, twisted up so as to form a fine loop, may be successfully used to remove the worms, being twisted around as directed for the feather, but it has no tendency to expel such as may not be reached.



210. A FEATHER STRIPPED AND BENT FOR THE REMOVAL OF GAPE-WORMS.

Turpentine smeared on the beak and neck is by some said to be sufficient. Camphor pills as large as a pea, or pieces of camphor-gum as large

as grains of wheat, once a day, may be found sufficient, either alone or in connection with camphor or turpentine in the water or food, ten drops to a pint. Powdered alum or sulphur blown down the windpipe will kill the worms (and the patient too, if administered too freely or too often). Again, by putting the fowls into a box covered with fine muslin and dusting lime through it the worms may be destroyed, but caution must be used lest the birds be smothered. Even as simple a treatment as crushed corn soaked in alum-water or kerosene oil is commended by some. The practice of pinching the throat to cause the worms to loose their hold, so they can be coughed up, is of doubtful wisdom, but may be tried when the windpipe is so full as to threaten suffocation. It may then be found necessary, when all other expedients have failed, to dislodge the worms by surgical means. Almost any one can perform the required operation by holding the windpipe firmly, so it can not slip or roll, and then making a short slit with a keen blade not far from the throat, *along* the windpipe, and not *across* it. After removing the worms and anointing the inside with weak carbolic acid, turpentine or kerosene oil, sew up only the cut that is made in the outside of the skin, leaving the windpipe to heal of its own accord.

Preventive Measures.—Remove the sick fowls from the flock to prevent infection. Burn all that die of the malady, and all worms that are found. Soak with kerosene oil, crude petroleum or strong carbolic acid the coops, roosts and grounds before admitting well fowls to them. Rigidly avoid all food that has been in the infected place, and burn it. When the disease has invaded a flock, add to the drinking-water fluid carbolate, camphor or lime. Boil the water before giving it if it is suspected of being the cause. When the premises are badly infected, raise the young fowls indoors, or in any place completely removed from danger. In some cases it may be found that the feed is the sole cause of the disease, and a change to corn (crushed if the fowls are too small to swallow it whole) may give complete relief, though the precautions for cleaning the apartments must still be observed and the water be kept pure.

COLD.—CATARRH.—COUGH.—BRONCHITIS.

All of these are substantially different stages and symptoms of the same disorder. Exposure to wet and cold is the general cause. Cough is, indeed, a symptom, not a disease, and is connected with the other three. It may, however, attend other diseases, and when its cause is not known the articles pertaining to roup and cholera should especially be consulted. Bronchitis is but an advanced stage or aggravated form of cold or catarrh. The three are marked by more or less discharge from the eyes and nostrils,

sneezing, wheezing, and, particularly in bronchitis, coughing and a rattling, hoarse sound in the throat. To distinguish these from roup, see whether the discharge is offensive. If it is, roup is to be treated; if not, catarrh or bronchitis. In all cases of doubt, use the precautions detailed for roup.

TREATMENT.—Remove the fowls to warm, dry shelter and give warm, soft food. These measures will usually be sufficient, but the following will be valuable as aids: For cold or catarrh merely—and no distinction between them is here made—put three drops of the strong tincture of aconite in a pint of the drink; if there is swelling about the throat, two or three grains of the second trituration of mercurius three times a day will be useful; euphrasia, the same as to form, dose and frequency, is desirable for worse instances of this symptom. For bronchitis, in addition to the measures just named, give sweetened water for the drink, adding a few drops of nitric or sulphuric acid. For both catarrh and bronchitis give some stimulant, as ginger or cayenne pepper in the food. The German Roup Pills will also be found of service. Treat catarrh and cold promptly, to keep them from developing into roup. Do not neglect bronchitis, lest it run into consumption.

CONSUMPTION.

This arises from neglected colds, catarrh and bronchitis, as also from long-continued in-and-in breeding, confinement in dark, unwholesome quarters, and heredity. Its essential feature is a tubercular deposit in the lungs, with a general derangement of the constitution.

Symptoms.—In the earlier stages there are no obvious symptoms. Later, a cough comes on, with weakness and loss of flesh, however good the feeding. When a cough persists in spite of all treatment, consumption should be suspected.

TREATMENT.—"Take a sharp hatchet and apply it just back of the comb," is Mr. Ward's laconic advice. The affected fowl is worthless for flesh or for breeding.

PIP.

By this term, which has been indiscriminately applied to so many affections, is here meant the disorder which is marked by a horny scale at the point of the tongue. It is only a symptom of some disease, but it demands treatment to avoid a possible case of catarrh or roup. It is probably caused by exposure in damp or cold weather.

Symptoms.—Beside the scale on the tip of the tongue, there will be

noticeable a peculiar pip, or "zip" noise; breathing disturbed and effected through the mouth; dry tongue; moping and retiring mood; loss of appetite; irregular and dilatory movements; generally costiveness, perhaps from indigestion; sometimes considerable heat of the body, especially in the belly near the thighs.

TREATMENT.—Afford dry, warm shelter. If there be costiveness or indigestion, give a dose of castor oil. Apply to the tongue and nostrils a weak solution of chlorinated soda, if any local remedy is used, but do not clip off the end of the tongue, as some have advised. Spongia, as recommended for mercurius in catarrh, may be used on general principles. The treatment, which consists merely in giving two or three grains of black pepper each day in fresh butter may be resorted to with a good deal of confidence. In any case, give no food except such as has been cooked and is easily digested.

CHIP.

Chip, or chipping, so named from the peculiar noise made by the patient, is a disease which resembles roup, and attacks young chickens, with very fatal results if not promptly treated. It arises from exposure to wet, in consequence of which the down on the body is kept wet for a long time.

Symptoms.—The plaintive "chip" is continued; the feathers droop and lose their gloss; the chicken is very tender when touched, retires to a solitary place, sits trembling constantly and violently, having fever and heat of the body, and gradually sinks and dies.

TREATMENT.—Remove the patient to a dry, warm place, handling it gently. In the early stages give colchicum every two or three hours, ten drops of the strong tincture being put into a pint of water, and ten to fifteen drops of this dilution being taken for a dose.

CANKERS ABOUT THE MOUTH AND HEAD.

These have been already alluded to as being perhaps particular manifestations of roup, and it is best, in general, to proceed with the treatment detailed for that malady. Such cankers, if they exist independently of roup, are caused by poor housing, filth and unwholesome food. They are marked by a watery discharge from the eyes and a somewhat sticky secretion in the mouth and throat. If it is known that roup is not the seat of the disorder, it will be sufficient to wash the affected parts with warm water (adding castile soap if they are gummy), clean out the throat and mouth with a weak solution of chlorate of potash, alum and water, swab off the

ulcers with a feather or very soft brush, and apply powdered borax in small quantities to the spots thus made bare. Stir into the food a little sulphur.

DIPHThERIA.

Reference has been made to this as a manifestation of roup. Though it is treated separately by some, it is deemed best in this work, for precautionary reasons if for no other, to refer the reader to the remarks upon that disease. It may, however, be remarked that, if one has a fowl suffering from a mouth and throat filled with mucus, and attended with small white ulcers about the tongue, it is advisable to blow into the mouth and throat powdered burnt alum, or equal parts of chlorate of potash and pulverized borax, being careful to remove the patient to prevent possible infection. Should this effect a cure, one may be confident that the disorder was not diphtheria in any true sense of the term.

SORE EYES AND HEAD.

The eyes may become sore from dust, excessive heat, dampness, and other causes, and give out a watery discharge. The whole head may become involved in the inflammation. Such mild affections are to be distinguished from cankers and from roup; but it is always safe to keep a sharp look-out for roup when the eyes are sore.

TREATMENT.—Wash the parts with a weak solution of white vitriol (sulphate of zinc), or with alum-water, or with a solution of alum and camphor. If the discharge has become gummy or hardened, remove it with warm water and castile soap, following up with one of the lotions here named, or with one of sulphate of lead. Give sulphur in the food, using the powdered form. Avoid the exciting causes mentioned above.

INDIGESTION.—DYSPEPSIA.

This disorder is a failure to properly digest and assimilate the food, and exhibits a variety of causes, conditions and results. It more frequently arises from too rich, unwholesome, or excessive food, too free use of grain and other hard feed, cold, general weakness, to say nothing of it as a symptom of various other affections.

Symptoms.—Listless mood; want of appetite; sometimes scanty droppings, sometimes free, as in diarrhœa and dysentery; fever; crop swollen in some cases, with a "tucked-up" appearance, as if from pain in the stomach; perhaps a sickly, yellowish hue in the comb and wattles, indica-

tive of disorder in the liver; in young chickens, sometimes sinking of the breast-bone.

TREATMENT.—Give less food and only such as is soft, mild and easily digested. Limit the drink. Give cut green grass or chopped onions in the food. See Crop-Bound, Constipation and Diarrhœa.

LIVER DISEASE.

This name, used in all domestic practice with such an indefinite meaning, is here applied to a disease of the liver which causes loss of flesh, a sickly appearance about the comb, wattles and head, and sudden death. The liver, upon opening the dead fowl, is found soft, with cheesy matter in different parts of it, and sometimes a broken blood-vessel. It is said to be more common in Cochins. It is best to destroy an affected fowl at once. One authority recommends small doses of mercury followed by cod-liver oil and Parrish's Food as being of measurable value.

CROP-BOUND AND WATER-CROP.

The crop may become engorged in consequence of the swallowing of a bone, hard corn or other indigestible food which closes the passage into the stomach. The latter organ being empty, hunger may induce the taking of more food, and thus aggravate the difficulty. Indigestion alone may cause it. In addition to the hardness of the crop, the fowl is uneasy and tosses its head.

TREATMENT.—Give very little or no food for a time. If this does not afford relief, pour down the throat some warm water and gently knead the crop for an hour, or until its contents are soft, then give two teaspoonfuls of castor oil. If the difficulty still persists, take a sharp knife and cut a slit an inch long, more if necessary, in the top or at the side, and remove the contents gently but thoroughly with the handle of a spoon, afterward passing the finger, previously oiled, all over the inside, to be sure that everything is taken out (particularly from the opening toward the stomach). Sew up the external skin with white silk, or, better still, with surgeons' thread, being careful not to stitch it to the crop, and leaving the wound in the latter to heal of its own accord. Anoint the parts with witch-hazel oil. Give no food or drink for twenty-four hours, and for a week thereafter only a small allowance of soft, easily-digested food.

By *water-crop* is meant a form of crop-bound which results from greediness in taking drink. The crop is not so hard and may contain wind or gas with the water. The disorder is corrected by cutting down the feed and the drink for some days, and putting chopped onions or garlic, or



211. BUFF COCHINS.

cayenne pepper in what food is given. Also put into the morning feed sal volatile, half a teaspoonful to each fowl, and into the drink a little nitric acid. Do not mistake this for true crop-bound.

COSTIVENESS.—CONSTIPATION.

Costiveness is caused by indigestion, taking cold, too close confinement, too much dry food and too little green, deficient supply of good water, and the like. It is indicated by frequent attempts to evacuate the bowels, either wholly unsuccessful or resulting only in small, hard and dark droppings. The fowl is uneasy and perhaps staggers.

TREATMENT.—Give an abundance of green food, and a soft mixture of bran and oatmeal. Ten drops of sulphate of magnesia may be added to a pint of the drinking-water. Along with an observance of these directions for the food it will be well to give aconite until the restlessness disappears, following then with *nux vomica*; or, if a cold is the cause, give *bryonia*. The last three remedies are to be given on the homœopathic plan, in doses as for children, according to the age.

DIARRHŒA AND DYSENTERY.

These disorders may result from an excessive use of green food, tainted food or impure water, extreme heat, exposure in damp weather, filthy quarters, general indigestion, poisons, or any inflammatory affection of the intestines or stomach.

Symptoms.—Loose droppings of different colors, which befoul the feathers; lassitude and loss of condition. In dysentery, which results from a diseased condition of the intestines, the droppings are more frothy, mingled with *blood* and attended with rapid prostration. A form of diarrhœa essentially different from the two described, occurs in old female fowls, in which a white discharge comes away more or less constantly, often dribbling out, and keeps the feathers about the vent encrusted with a white, chalk-like deposit. It is doubtless due to some derangement in the shell-making function, and can best be treated by promoting the general health and using the means noted below.

TREATMENT.—Give two pills daily, as large as a pea, made of a mixture of five grains of powdered chalk, five of rhubarb and three of cayenne pepper, adding one-half grain of opium in severe cases. Another good remedy is camphorated spirits on barley-meal, three to six grains for each bird according to the age; or ten to twenty drops of the same may be put in a pint of the drink. For mild cases, and in the early stages of others,

finely-powdered chalk on boiled rice may be sufficient. The remedy last named is recommended for the white discharges of old females, for which the pills prescribed above should also be tried, as well as a little lime-water (see page 875). Restrict the drink in all forms of these disorders, and put into it a little alum or tincture of iron. Dysentery, with bloody discharges, is a serious disorder; it is best to give a dose of castor oil and follow with three to six drops of laudanum every few hours, supplying an exclusive diet of mild gruels. It is of importance that the patient be kept quiet and apart from the flock, especially in dysentery. Homœopathic doses, every two hours, of ipecac and chamomilla can be recommended with confidence, as can arsenicum when bad food is the cause. In spite of all treatment diarrhœa may become chronic. If so, and even before, small doses of sweet oil may be found beneficial. In all cases keep a sharp lookout for cholera and isolate the affected bird when you are at all doubtful regarding the nature of the disorder. Bone-dust is used as a preventive of diarrhœa and it is well to put a little in the feed for some days after a cure has been effected, and also to thus occasionally administer it to well fowls.

WORMS.

Worms in the stomach will produce substantially the same symptoms as indigestion. If they are in the bowels, costiveness or diarrhœa may be more marked, while the fowl will be uneasy and pick at the vent if they are in the lower part of the intestine. In all cases there will be more or less loss of flesh, and often diminished gloss in the feathers, while the bird has either an impaired or voracious appetite. The only unmistakable symptom is the presence of worms in the droppings when they first pass out. An unhealthy condition of the digestive organs is the main cause.

TREATMENT.—A dose of castor oil, followed by a light addition of sulphur to the food, may expel the worms and restore the general health. A little cayenne pepper in the feed and rusty nails in the water will aid the cure. The use of cina and santonine can be highly recommended.

INFLAMMATION OF THE FORE-STOMACH.

Inflammation of the stomach may arise from improper food, such as that which is too stimulating. Its symptoms are not readily distinguished, but it may be suspected when a fowl pines away without an obvious cause and chooses only soft, cold food, especially if there be increased thirst, a "tucked-up" appearance, and an abnormal heat in the fore part of the belly. Loose, corroding droppings may be noticed.

TREATMENT.—Give only soft, mild food and not very cold drink, using the treatment, in the main, that is detailed for Indigestion.

CORE.

This is a deposit or excrescence in the gullet, or in the organs of digestion further down, sometimes being dark, sometimes brownish-yellow, sometimes ochre-colored and mingled with blood.

TREATMENT.—For obvious reasons it will hardly be detected unless a dead fowl is opened. Then others of the flock may, as a precaution, be treated with mercurius, china and silicea, upon the homœopathic principle.

PARALYSIS.—APOPLEXY.—MEGRIMS.—STAGGERS.

These are all affections of the nervous system due to an excessive flow of blood to the head, or to a weak condition in the blood-vessels of the brain which makes them incapable of bearing their normal pressure. When a fowl is made to stagger from this cause, or to run in a circle, or flutter, without other manifestations, the disorder is called megrims, staggers, dizziness or vertigo. This may become chronic and thus leave no doubt regarding its nature; but mere dizziness and staggering also appear in constipation, roup, cholera, and other diseases characterized by weakness. Geese sometimes stagger in consequence of parasites in the ear, and animals suffering from such a disorder will show symptoms so similar to those of real staggers that the difference will scarcely be detected. If the staggers are followed by falling and unconsciousness, apoplexy has come on. Either of these forms may show a temporary or permanent relief as soon as the blood leaves the brain. Should a blood-vessel be ruptured, the disorder is known as paralysis, and the fowl either dies at once or suffers an impairment or loss of the use of one or more of its limbs. Such paralysis may be relieved and occasionally the recovery may be apparently complete.

Cause.—In addition to the above causes, high feeding conduces to the pressure on the brain, Indian corn being especially bad for some breeds. Any too stimulating food tends to the same end, as well as mechanical injuries, violent exertions, disorders of the spine, or even the mild straining in laying an egg. Some of these influences may give rise to temporary or permanent paralysis in the leg or wing, which will disappear if the exciting cause is removed.

TREATMENT.—In all of these disorders, remove the patient from the flock and keep it free from excitement and in a dark place. Hold the

head under a stream of cold water to drive the blood from the brain, and afterward give a light diet. Give aconite if the skin is dry and hot; belladonna, for heat about the head and convulsive movements of the head; nux vomica, for the first indications of the disorder; opium for the unconscious state of apoplexy. Beside this treatment, and independently of it, paralysis may be benefited by one-sixteenth grain doses of strychnine, but it should not be resorted to until a day or two after the first paroxysm has occurred and the fowl has begun to hobble about and take its food. Either of these diseases may be profitably treated for some days after apparent recovery with two doses per day of bromide of potassium, four to ten grains at a time, according to the age. It may be remarked, finally, that treatment has been detailed for fowls that are of a particular value for food, exhibitions, or eggs for the table, since those of little value are not worth the pains, and no affected bird is fit for breeding purposes.

RHEUMATISM, CRAMPS AND GOUT.

Rheumatism is generally caused by exposure to wet, as in the grass in the morning, damp coops or roosts, and by hereditary influences. *Cramps* may arise from rheumatism, or from the same causes as the latter, but some forms are produced by indigestion, internal inflammation, diarrhoea and dysentery. In rheumatism the limbs suffer an impairment or loss of use, are hot, swollen and stiff, the toes being often drawn out of shape; the fowl persistently sits down and can not use the perch; the heart may become involved and thus induce death, preceded by excitable uneasiness. In the treatment, give warm, dry shelter, and good, stimulating, easily digested food, including a little cooked meat each day. Rub the affected parts with hot mustard-water, immediately wiping them dry. Oil of witch-hazel is a good ointment, as are also lard and butter.

Gout attacks Asiatics especially, and is characterized by hot, swollen and inflamed feet. Keep the fowl in a warm, dry place, and feed as for Rheumatism. Give three drops of the wine of colchicum twice a day and a quarter to a half of a grain of calomel at night. Rub the limbs with sweet oil. Give bryonia to turkeys suffering from this disease.

DEBILITY AND LEG-WEAKNESS.

Close confinement without fresh air, continued exhibitions, shock or fright, injuries, or imperfect development of the nervous system, may produce general *debility*. The symptoms are loss of spirits, appetite and condition, with constitutional prostration. Insure rest. Give nourishing food,

a raw fresh egg being a good diet while the appetite is impaired, followed up with a little cooked meat. As a tonic, put a few drops of muriate of iron in the drinking-water, rusty nails in the water being also of service.

Leg-weakness is due to prolonged in-and-in breeding, to high feeding, which increases the weight of the body more rapidly than the muscular strength, and to deficiency of the earthy matter of the bones. It most often attacks Cochins, Brahmas and other large breeds, and young cocks are more liable to it than others of a flock. Its nature should be closely studied so as to distinguish it from rheumatism, gout and debility. Its sole manifestation is repeated or constant squatting on the hocks or belly, sometimes with utter inability to stand. In the way of treatment, feed wheat, barley, meat and other articles that do not tend to produce fat. In warm weather dip the legs in cold water twice a day. Give three times a day a pill made of a mixture of five grains of phosphate of lime, one-sixteenth of a grain of strychnine, and a half-grain of sulphate of quinine. Also supply a tonic of iron, a few drops of the tincture or some rusty nails in water. Occasionally give lime-water (see page 875) as a drink.

SCALY LEGS.—ELEPHANTIASIS.

This chiefly attacks old birds of the Asiatic breeds, and is caused by an insect which, with its eggs and cast-off skin, increases the size of the scales which form on the legs. Too close confinement, over-feeding, damp or muddy quarters, insufficient meat and too little green food are exciting causes. The insects sometimes infest the comb and then require the treatment given below. The disease is contagious and may be transmitted to other animals or to man. It is characterized by a whitish scurf on the legs and toes, sometimes a half-inch thick on the former, which may grow hard if neglected.

TREATMENT.—Keep the fowl in a clean, dry place. Wash the legs well with water and soap, using a stiff brush to remove a part of the scurf at a time if it has become hard; then smear with lard and sulphur mixed, or with kerosene oil. Lard and coal-tar make a good ointment; vinegar or glycerine may be sufficient for mild cases. Some use a wash of a weak solution of sugar of lead in the morning and apply a dilution of creosote at night. Stoddard's Poultry Ointment will effect a cure without any of the above remedies. It should be kept on the shelf in every poultry-house convenient for use. Night is the best time to apply it. This disorder is sometimes called itch, but by the latter term we generally mean a condition in which parasites are *in the skin*. Another form of itch in poultry is considered on the next page.

BUMBLE-FOOT.—BOILS.—ABSCESSSES.—TUMORS.

Bumble-Foot is a swelling, wart, or corn on the ball of the foot which grows in size, becomes soft, and ulcerates. It is caused by bruises from alighting heavily on hard surfaces, and from roosting on small or rough perches.

TREATMENT.—Remove the patient to quarters without perches. If the part be painted with iodine in the first stages, a cure will often be effected. Should the swelling continue and be slow in ulcerating, bind on a poultice of bread or turnip. After it has "gathered," open freely with a sharp blade, wash out the sore with warm water and castile soap, and dip the foot two or three times a day in water, to which has been added sulphate of copper in the proportion of one-fourth of an ounce to a quart of water. During the formation of pus, and while it is discharging, give mercurius.

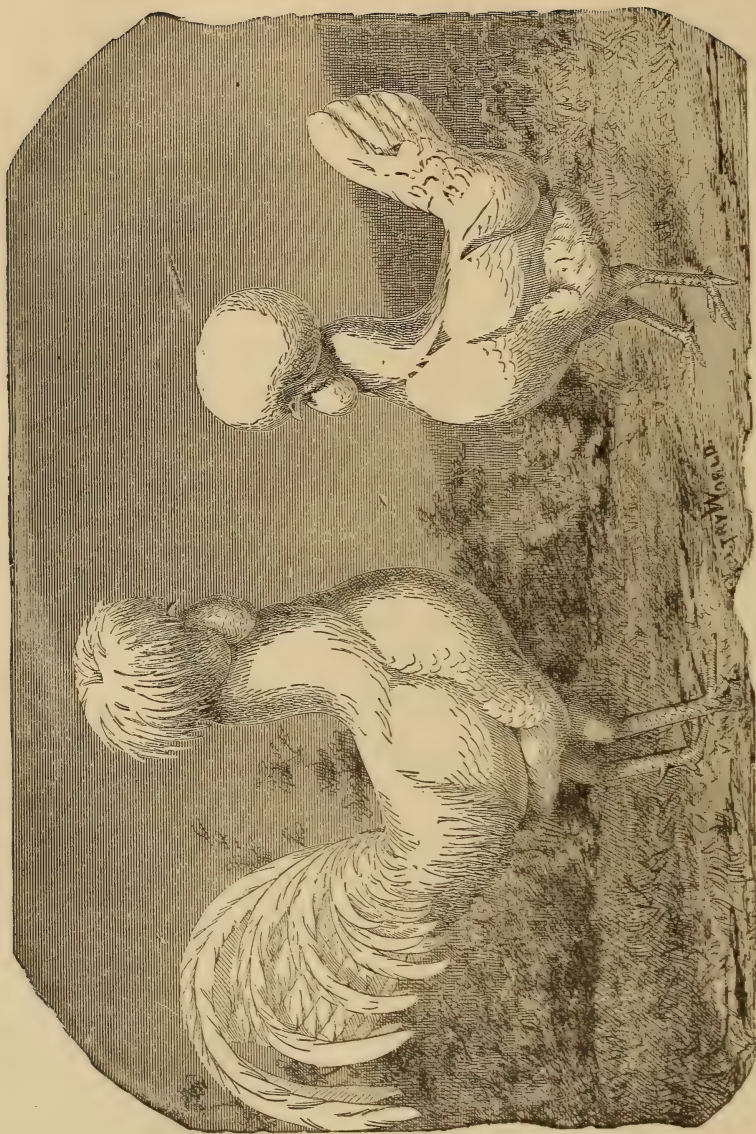
Boils and Abscesses may occur on any part of the body, and require the same treatment, in the main, as is recommended for Bumble-Foot.

Fatty *Tumors* may form on various parts without causing any serious trouble aside from their inconvenience. As treatment, cut them out with a sharp knife, preserving the skin so it can be drawn completely over the opening. Sew the skin together, leaving a small hole at the lowest part for the pus to escape. Put on the sore thus left a lotion of calendula or arnica for a few days. Supply wholesome food and quarters to promote the health.

CHICKEN-POX AND ITCH.

CHICKEN-POX.—This is characterized by small ulcers on the head and face, on which scabs will form. It is not to be confounded with roup; nor with the dry, horny scales which sometimes form on the face. It is contagious but not dangerous, occurs principally in cold, wet weather, and perhaps results from peculiar atmospheric conditions. In the treatment, keep the parts clean with water and castile soap and apply vinegar or a strong solution of chlorate of potash, giving a little sulphur internally. Put a teaspoonful each of pulverized charcoal and sulphur in a pint of soft food. To prevent contagion, keep the sick fowls from the flock.

ITCH.—Fowls that are kept in unclean quarters and without fresh water are subject, in summer, to an itching eruption, with more or less loss of feathers. Insure absolute cleanliness. Give sulphur once daily for three days; then staphisagria for the same time; finishing with sulphur. If the eruption takes the form of ulcers, give dulcamara. It will be noticed that this disorder is not characterized by the presence of parasites in the skin, as is the case with itch in the human body. . . . Scrupulous cleanliness may suffice.



212. WHITE-CRESTED BEARDED WHITE POLISH.

WHITE-COMB AND SCURFY SKIN.

When fowls, especially Cochins, are kept in small, unhealthy quarters, or are deprived of fresh green food, a whitish, dust-like scurf sometimes appears at the bottom of the comb, afterward covers all of it, and then extends over the wattles and neck. The feathers on the affected parts lose their web, the bare quill being left, and it may in turn drop off, the fowl dying in extreme cases. The disorder is contagious. After recovery, the feathers will come off at the next moulting season.

TREATMENT.—Remove the exciting causes mentioned above, in the diet and location. Apply Stoddard's Poultry Ointment, or a mixture of tar and sulphur. Good authority claims that turmeric has a special efficacy; it may be used in an ointment made of one-quarter of an ounce of turmeric and one ounce of cocoanut oil. If lard be substituted for the cocoanut oil, as it may be, the ointment should be made fresh for every application, and should be occasionally removed thoroughly from the affected parts. Give internally ten to forty drops of castor oil, according to the age, with a teaspoonful of powdered sulphur in the food. Remove the affected fowls to prevent contagion.

A scurf resulting from the same causes as white-comb may appear about the face, comb and neck, perhaps in the form of dry, bony scales, but without the distinctive features of the disease last treated. The measures given for white-comb are, however, to be adopted. Do not confound this with roup or chicken-pox because of the similar symptoms.

BLACK-ROT.

In consequence of indigestion, lack of variety in the feed, want of exercise or of green food, the comb may turn black, the feet and legs swell, and general loss of flesh take place. The malady is known as black-rot, and probably occurs oftenest in Spanish fowls.

TREATMENT.—This is useless except in the early stages. Give then a light dose of castor oil, following with warm, nourishing food and some such simple tonic as rusty nails in the drink, or tincture of iron. Observe the general directions given for Indigestion.

MOTTLED FACE AND EARS.

Red spots sometimes appear on the face of black Spanish fowls, and on the ear-lobes of Leghorns and similar breeds. The keeping of the sexes together is the cause, and their separation the cure and prevention. Sweet

oil, spirits of turpentine, or a superior article of whiskey may be smeared on to restore the original color. Confinement in dark quarters will aid, and it will also produce that whiteness of these parts which fanciers so much desire when exhibiting fowls at the public shows.

BAD MOULTING AND FLEDGING.

The period of moulting, in which the old feathers are shed and new ones come in, is a critical one for old fowls in particular, and only less so for others, in consequence of the drain on the digestive and other functions incident to the formation of the new coat. The process may be made slow or irregular by improper food, close confinement, prolonged in-and-in breeding, and other debilitating influences, and will then be marked by inactivity and general wasting. Akin to this function, not only in nature but also in origin and treatment, is fledging, or the formation of the first coat on young fowls.

TREATMENT.—This is mainly the same for both moulting and fledging. To assist the function, it is well in all cases to give a little tincture of iron, or to put some rusty nails in the drink, and slightly increase the allowance of lean meat. Add Douglass Mixture (see page 874) to the drink, a teaspoonful to each pint. Give soft warm food in the morning, and, for old birds especially, grain at night. Keep the fowls warm and out of the wet. *Calcareo carbonica* and *agaricus* are valuable remedies.

SHOOTING-THE-RED.

In turkeys the development of "the red" about the head and neck is as natural as moulting and fledging are to all birds. It is so unmistakable in its manifestations as to need no description. To assist the function, make powders of three parts of cassia bark, ten of ginger, one of gentian, one of anise and five of carbonate of iron. Give to each twenty turkeys, in the feed, a teaspoonful twice a day, commencing two weeks before it is time for the red to appear, and continuing some weeks afterward.

LICE.

Lice absorb the juices of the body and cause persistent pecking and scratching, great depression, loss of flesh, and even death. The symptoms are such as to create a suspicion of some serious constitutional derangement, and all poultry sick from a cause that is not certainly known should be examined to ascertain whether these pests are on the body. They are

bred in great numbers in filthy quarters and nests, and in flocks deprived of earth-baths. They are especially prone to take shelter in the tufts of crested birds.

TREATMENT.—Attend to the directions for "Cleanliness" given on page 869, remembering that the droppings and other filth are favorite haunts. Thoroughly dust into the roots of the feathers Persian Insect Powder, preferably with one of the powder blowers or bellows. In the absence of this, dip the fowls in a bath made of one part of carbolic acid and sixty of water. A good expedient is the application of suds of carbolic soap on such places as are specially infested. The use of any such fluids as these should be attended with caution to prevent colds. An ointment of sulphur, kerosene oil and lard may be spread under the wings of full-grown fowls, but young ones have been injured and even killed by a too free use of kerosene, as well as by sulphur when mixed with lard. Smearing with simple lard, lard oil, or whale oil, is better for the young. A thorough rubbing or dusting with powdered sulphur has often been sufficient, and yellow snuff is highly recommended for the same purpose. Wormwood and tansy teas are good, as well as oil of fennel. Absinthum and sulphur are good internal remedies. Tone up the system with cayenne pepper, iron, nourishing food and cleanly quarters.

RED MITES.

These are scarcely less troublesome than lice, are exceedingly annoying, and will survive very harsh treatment.

TREATMENT.—Proceed as for lice. If the pests are not killed or driven off, and you are willing to stain the plumage of white birds, grind together two ounces of sulphur, two ounces of camphor soda, a half-ounce of carbolic acid or tobacco leaf, and a piece of lime as large as a hen's egg; steep in hot water until thoroughly mixed: let the whole stand until perfectly settled, and then pour it off so as to get out all of the sediment. When it is cold, thoroughly apply it through the feathers with a stiff brush. The ointment of sulphur, lard and kerosene oil, recommended for lice, may be well rubbed under the wings, on the back of the neck, and on the vent. It is a reliable remedy, but the cautions about its use on young fowls must be observed, or fatal effects will ensue.

CHILLS.—FROST-BITE.

Young fowls are sometimes benumbed by cold, and even apparently dead. They should be dipped in water as warm as the hand can comfort-

ably bear until they revive, and then be kept in a warm place until completely restored.

The comb, wattles and feet are especially exposed to the frost and may be deformed or destroyed thereby. In the less severe cases, the crown of the comb and edges of the wattles first become purplish and then pale and bloodless. Prevention is the best treatment and an excellent means to this end is the oiling of the exposed parts in the beginning of and during "cold snaps." At such times the thoughtful fancier will frequently examine his fowls to detect any existing or threatened cases. If possible, treat before the parts have thawed any. Rub on snow, very cold water, or pounded ice until the parts have become pliable; then bathe with camphorated spirits, or with "hot drops." If the thawing has taken place by changes in the weather, it may be beneficial to apply sweet oil, glycerine or carbolate of cosmoline until all soreness subsides.

DEFORMITIES.

BONE-WEN, OR SPLINT.—This is an enlargement or excrescence about the bones of the joints. It is incurable.

CROOKED BREAST-BONE.—This results from using perches that are too narrow or convex, and should be treated by removing the cause.

WRY-TAIL.—If this does not result from a deformed spine, it may be improved by cutting the tendon which draws the tail aside; or by cutting out a bit of the flesh on the side opposite to that toward which the tail points, the healing of the cut forming a scar which will tend to draw the tail back to its normal position.

SQUIRREL-TAIL.—By this is meant a tail which turns up over the back like that of a squirrel. It is best treated by cutting the tendon which holds the tail in that position.

WEB-FOOT.—Web-foot in young land-fowls may be cured by cutting the web between the toes with scissors. The cut will heal spontaneously.

ACCIDENTS AND INJURIES.

POISONS.—Too much caution cannot be taken when using rat's-bane, strong carbohc acid, Paris green and other poisons. They should be sedulously kept out of the reach of poultry. When it is known or suspected that poison has been taken, pour warm water down the throat and then hold the fowl up by the feet until it runs out. Repeat this several times.

When a fowl meets with an accident which seriously disables it, the best treatment is to kill it, unless a special value attaches to it which will war-

rant the pains of prolonging the life of an animal which, at best, will probably be maimed. A few injuries which may be subjected to treatment in specially valuable birds are here mentioned.

CUTS AND OTHER WOUNDS.—Clean out all dirt and other foreign substances. Draw the lips of the wound nicely together and secure them with strips of adhesive plaster (which will generally make it necessary to shave off some feathers), laying them *across* the wound and leaving spaces between them for the escape of any pus that may form. Dress with a lotion of calendula. To keep out maggots and ward off gangrene, put on some preparation of carbolic acid. Should the wound be much inflamed and slow in healing, apply the calendula-lotion. Sweet oil rubbed on any wound will exclude dirt and thus favor the healing. If the wound gapes badly, it may be sewed up. If the bleeding is profuse and does not stop after the lips are brought together, apply cold water or pounded ice.

CRACKED HOCK.—The skin on the inside of the hock-joint may crack and seriously impair the use of the limb. The cracking is preceded by a weakness and wavering about the hock, perhaps even by squatting as in leg-weakness or rheumatism. Apply fir-balsam ointment to effect a cure. As a preventive, when the weakness about the hock is noticed, bathe the joints three times a day with a liniment made of sweet oil and ammonia, equal parts, and give two pills daily of lard, three parts, and cayenne pepper, one part.

BRUISES are best treated by applying calendula-lotion or arnica, though the efficacy of the latter is ridiculously exaggerated.

LAMENESS.—When this is not a symptom of paralysis, gout, rheumatism or broken bone, it may result from a sprain, and is then best treated by pouring cold water on the affected joint and putting on some liniment.

BROKEN AND DISLOCATED BONES.—These disorders may exist without the knowledge of an observer, unless he is well versed in the anatomy of fowls. Though fractures will occasionally heal fairly well without treatment, fanciers will sometimes wish to try their hands at surgery in order to reduce the chances of deformities. Bring the broken ends together until they fit neatly, as indicated by the touch. Cover the part with thick paper previously well soaked in white of egg or mucilage, closely adapting it to the shape of the limb; then bind on strips of pasteboard, also carefully adjusted to the shape. Keep the fowl by itself, as quiet as possible, and deprived of the use of the limb if practicable. The resulting fever may be treated by showering the limb with cold water. When a wing is broken, bring the ends of the bone together as well as you can, close the wing, tie the quills together, secure the wing to the side, if possible, and prevent attempts to fly.

Dislocations may be reduced by drawing the affected limb, gently and firmly, and turning it around in any direction which a knowledge of the joint suggests as suited to the return of the bones to their positions.

DISORDERS PECULIAR TO FEMALE FOWLS.

Some knowledge of the anatomy and physiology of the organs connected with the formation and laying of the egg is requisite to an understanding of the disorders peculiar to female fowls. Of the accompanying cuts the first represents the ovary, resembling a cluster of fruits, in which the egg, first appearing as a very small yolk, is fertilized and remains a few days. It then passes into and through a canal, called the



213. THE OVARY.



214. THE OVIDUCT.

A partially formed egg (see 214) is dropping from the ovary into the upper end of the oviduct, and a mature one, ready to be laid, is near the lower end, close to the branch of the gut.

oviduct, shown in the second cut, in which it receives the successive layers of the white. It finally lodges in an enlargement called the uterus, in which it remains until it is ready to be expelled, or "laid."

EGG-BOUND.—Sometimes the egg in the uterus (represented by the enlargement toward the bottom of cut 214, near the lower end of the gut) becomes too large to be expelled, and the fowl remains on the nest in vain

efforts to expel it, or comes off and walks about in a distressed mood, with the wings hanging. Cochins are especially subject to this difficulty. Relief may be afforded by giving a light dose of castor oil, but it is better to wash out the vent with water and inject into the uterus (not the gut) an ounce of sweet oil. If an oiled feather be passed up the canal, the same effect as that of an injection will be secured. The use of an instrument to puncture or break the egg is dangerous, and should not be resorted to except as a last expedient. If this disorder is neglected, eggs may accumulate in the duct and form a large tumor.

EGGS BROKEN IN THE BODY.—Eggs may be broken in the body by mechanical injuries or by straining in laying them. This is usually fatal. Uneasiness and bagging-down behind are the distinctive symptoms. The treatment is an injection of a teaspoonful of castor or sweet oil.

SOFT EGGS.—Eggs without hard shells, or with such as are imperfectly formed, may be laid occasionally or repeatedly. The causes are inflammation of the oviduct (see below), over-feeding, eating ergot, lack of shell-making food, and worry, as by driving fowls about. As treatment, remove the causes, give lime-water (see page 875), and put within reach of the fowl old mortar or powdered oyster shells.

INFLAMMATION OF THE OVIDUCT.—This results from taking cold, unwholesome or too stimulating food, and excessive attentions of the male. The symptoms are general fever; feathers on the back and rump puffed out; continued straining, as if to lay an egg; eggs imperfectly formed, perhaps soft-shelled, or even simple yolks. In the way of treatment, keep the fowl away from the cock a long time. Give a grain of calomel and one-tenth of a grain of tartar emetic in meal, repeating the dose the next day if relief is not afforded. Give mild, easily digested food.

PROTRUSION OF THE OVIDUCT.—HERNIA.—Straining to lay eggs or general debility of the system may cause the end of the oviduct to protrude from the vent. It may result in "breaking-down behind." Bathe the protruding part in blood-warm water, oil it, and gently push it back to its place with the finger, repeating the operation as often as necessary. Give such unstimulating articles of diet as boiled rice and potatoes, avoiding those which are known to tend to the production of eggs. Give aconite and mercurius internally; or give once a day tartar emetic and calomel as recommended above for inflammation of the oviduct.

BREAK-DOWN BEHIND.—Beside protrusion of the oviduct and broken eggs in the body, this disorder may be caused by an undue accumulation of fat in the hind parts. A cure may eventually be effected by a low diet when the last is the cause, but the fowl is unfit for breeding purposes. Cannabis may be of service.

SWEAT MALADY.—If one is so careless as to allow his fowls to hatch in damp, musty coops, he may find them moist, clammy and black under the wings. The treatment consists in giving wholesome quarters, washing the parts and powdering them with flour.

SITTING FEVER.—When a fowl persists in sitting, do not resort to the foolish and useless expedients of ducking in cold water, tying rags to the tail, and the like. Let the fever “run its course,” with or without eggs as you prefer.

FEATHER-EATING.—This vice is almost wholly confined to hens, and is more common in the French breeds and Malays. Loomis’ Poultry Bit is a sure cure. In connection with it, give fresh meat and bone crushed into small pieces, and indeed this diet alone will cure many cases.

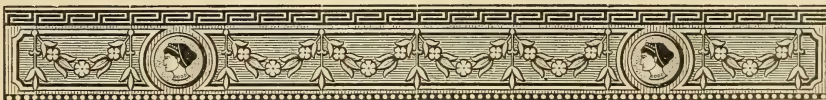
EGG-EATING.—If a fowl eats her eggs, she will probably teach the vice to others in the flock. To effect a cure, keep the nest in a dark place. Give fowls that are kept shut up plenty to do by forcing them to “scratch for a living,” which may be done by putting all their grain under a pile of straw, leaves, or other material. The same measures are used as a preventive. Occasionally the hen eats the eggs to get the shells, in consequence of the absence of lime; at such times, keep old plaster, pounded oyster shells and lime-water (see page 875) within her reach. If the vice is persisted in, benefit may arise from giving the hen a wide run, but the use of the hatchet on the neck is a sure cure, and prevents the fowl from setting a bad example.





PART IX.

CAGE BIRDS AND THEIR DISEASES.





215. THE FAMILY CHOIR.

PART IX.

CAGE BIRDS AND THEIR DISEASES.

BY HERR GUSTAV STAINSKY (LATE OF GERMANY),

Member of the Berlin Bird Society, and American Correspondent of the same; Importer of Harz Mountain Warbling Canaries; Proprietor of a Bird Hospital, Chicago.



INTRODUCTION.

HE cares and conflicting passions of life are most agreeably relieved by the varied tints of the flowers which clothe field and garden, and by the birds which flit among them, to please with their exquisite symmetry, delight with their rich and gorgeous plumage, and charm with their entrancing song. These "beautiful and well-created things" stimulate and purify the love of beauty which is such an essential element of every normal mind and soul, and a genuine delight must ever be felt in a study of their form, plumage, song and habits. In my native land societies are formed expressly for such study, it being my esteemed privilege to have a membership in the one at our capital, and to continue its correspondent in the fair country of my adoption. In such favorable circumstances many things have been learned which could not otherwise have come within my knowledge. While the life of birds in their natural freedom has been a special theme of investigation, we have been led to give studious attention to their needs and care when in captivity, for, in spite of the tenderest care, influences which are inseparable from a life of confinement will always induce some diseases not known among birds in their native fields and forests. As a result of such observation these disorders are treated directly from experience in Germany, usually without the necessity of books;

but in America the little sufferers are too often left to linger and die in the absence of that experience, and of reliable books devoted to the subject. If I shall have the good fortune to allay the pain of those which are in and about the homes of my readers, it will abundantly repay me for my years of study in their behalf. What is offered in the present work is based upon the experience of many others as well as of myself, though a special study of American birds has been made since my arrival in this country, supplemented by an extended practice in treating those which have been brought to the hospital. It has been a source of much pleasure to thus give to the public such aid as I confidently believe will be the means of avoiding many of the sufferings to which our helpless little pets have been subjected, and my thanks are due to the editor for his valued assistance in reducing my language to the wants of the English reader.

A few remarks are first in order upon the care and health of domesticated birds as a class, for nothing is so important in the treatment of a disease as its prevention. Many ills can be avoided by a proper attention to the cage and other apartments, the food, drink, and general management.

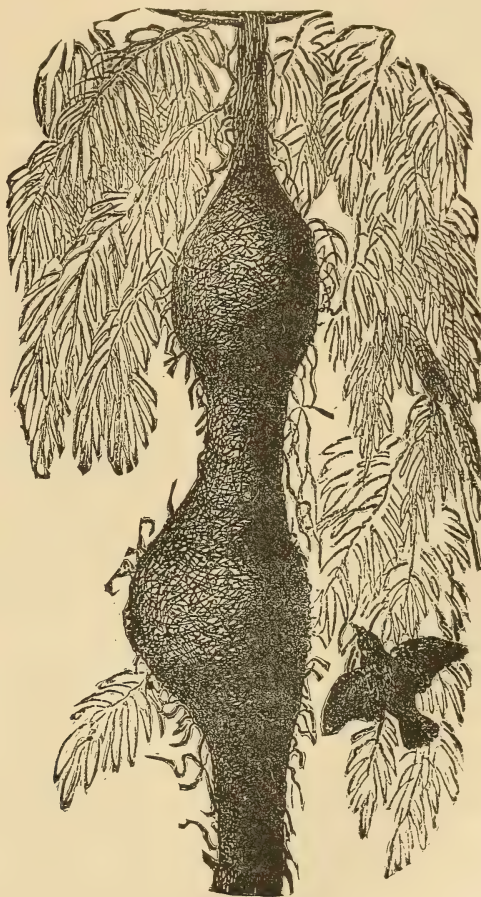
THE CAGE AND AVIARY.

Size.—In this particular, as well as in others, it is best to keep a captive bird in a condition as nearly like its natural surroundings as practicable. If one can afford a spacious aviary, with suitable apartments, perches and other appointments, she may expect a more healthy condition and better results in plumage and song. But the majority are compelled to keep their birds in close confinement, or have none at all, and for such the first rule is that the cage shall be commodious enough to at least insure ease of movement.

Cleanliness.—The temperature of the body of birds is much higher than that of man, and their respiration is proportionately more active. Because of these two facts the exhalations from the skin and lungs are thrown off with great rapidity and demand special pains to insure the requisite cleanliness. Again, by the flitting and hopping of the captive in small apartments the water and food are scattered about, and becoming mingled with the droppings, which have a marked tendency to ferment, they soon produce a foul condition which is highly prejudicial to health. It is, therefore, imperative that the cage be cleaned at least once a week in all seasons, and still oftener in warm weather. To be sure, the desired neatness can be secured only by doing this daily. Indeed, the safe rule, from a standpoint of health, is to attend to the cage or aviary at once if it gives out an odor that indicates an unwholesome habitation. In doing this the apartment should not be left in a drenched or very damp

condition. The perches should receive special attention, and even the sand in the bottom of aviaries should be frequently removed and be replaced with a fresh supply.

Uncleanliness is a prolific source of disorders in the feet, and these members should receive close attention. They will often become encrusted



216. NEST OF THE ORIOLE.

with the droppings and other matters and thus be irritated and sore. Hairs, fine feathers and tough straws become entwined about the toes, soon cut deep into them, and perhaps cause their total loss. In cleaning feet that have become thus involved, dip them into tepid water until the dirt is

softened and comes off, so that the skin may not be torn away and thus induce painful and persistent ulcers. .

Too much care can not be taken to keep out lice and mites, for they are very injurious to the health of birds. They suck the blood, rob them of sleep at nights, always rapidly reduce the strength, and sometimes cause death. They gather in great numbers on the perches, in all cracks, and in other parts of the cage or aviary. Studious cleanliness is the best preventive. Measures for eradication, when they have once appeared, are named further on, under the special treatment for lice and mites.

Light and Ventilation.—Light and air are two of nature's most potent agencies in counteracting filth. Every bird should have a liberal allowance of sunlight, though the power and directness of the rays are to be determined by the climate which is natural to the captive. Among those that need frequent sun-baths the canary deserves special mention, though it should never be subjected to extreme heat or a dazzling glare. For the development of the song, canaries are best kept in a very dark cage, made expressly for the purpose, except during the period of moulting and breeding; but this does not apply to the question of light for birds in general. If possible, every cage and other inclosure should be occasionally subjected to the full glare of the sun, the birds being meanwhile removed if their natural condition indicates that such exposure would be harmful. Both in airing and in ordinary ventilation it is imperatively essential that one avoid all direct draughts of cold or damp air on the birds, for they will take cold as well as a human being. The last remark is not sufficiently heeded by the ordinary fancier, and she consequently has sickly or dead birds. A good rule is to keep the temperature at from 65° to 70° Fahrenheit, with an absence of draughts.

The Bath and Drink.—A bath should be afforded daily in some suitable dish or font, but on cold days and in the winter the water should be milk-warm, and the bath may be omitted entirely in extreme cold weather. The best drink, since it is that which is provided for all birds in their native state, is cool, fresh water in summer, milk-warm in winter. Special pains is requisite in supplying it, because it will become stagnant by standing and is liable to be impregnated with all impurities that come from the body or surrounding atmosphere. Even fresh rain-water may be injuriously impure by standing in the open air twenty-four hours. It is, therefore, necessary that a supply be given at least once a day. If there is any doubt in respect to absolute purity, it is best to boil the water and give it after it has become cool.

Food.—The food, drink and air furnish the materials by which the repair and growth of the system are effected, and upon their selection must

depend the health of the body. Two peculiarities in the anatomy and physiology of birds need special mention here, as bearing directly upon the topic now before us. First, the lungs are very small, but the bones are provided with various air-cells which may be filled or emptied at will to regulate the buoyancy needed for flying. If the food is of such a nature as to interfere with this function, it is evident that the general health will be disturbed and the facility of flight be impaired. Second, the digestive organs exhibit differences according to the various kinds of food which the Creator designed for them. In song-birds, for example, there are three successive cartilaginous stomachs, covered with strong muscles. Indeed,



217. CANARIES AND NEST.

organs of this kind are given to all birds which live on grains, seeds and other hard food, and the requisite grinding is effected by small stones taken into the gizzard. This also emphasizes the necessity of giving to every bird the kind of food which it would get in a state of nature.

It is manifest that the only rational principle for adoption in feeding is to accord to a bird a diet as nearly identical as possible with what nature has especially provided for it. Since this natural method cannot be used for birds in confinement in all its details, one must meet the lack of nature's

food, as far as he can, by close observation of the effects of different articles that are at hand. To this difficult question the members of our bird societies patiently address themselves. It is evident that, to give any trustworthy directions upon feeding, one must divide his subject according to the species. Nothing is the cause of more sickness and death among birds than giving them any and every article of food simply because they seem to relish it, or at least take it readily.

Gravel, Cuttle-Bone and Salt.—Every cage should be supplied with small gravel, and the best kind is that which may be scraped up along the lakes and rivers. Fine sand is not a good substitute. Without such a provision the digestion is disturbed or entirely interrupted. Again, cuttle-bone and crystal salt should be kept within reach, since they afford needed material for the making of blood and bone. A bird may live even years without them, but it should have the opportunity of getting them as the system demands. This remark is not intended to lead to a disregard of the caution which fanciers emphasize about putting salt into the food of certain species.

Macena Biscuit.—As a substitute for the egg-foods which are so extensively used, the writer has an article of his own discovery which he calls the Macena Biscuit, and which, for canaries, mocking-birds, thrushes, parrots and other species, he has found to be much superior. It is mentioned here as an additional food, and not as a necessary part of the following points on feeding and treating. It insures rhythm and flexibility of the voice, is the most digestible for both the old and young, and is thus suited to all cases of debility in particular. It is an admirable remedy and preventive for inflammation of the bowels, and also saves much time and trouble in the breeding season. The birds always have a keen relish for it, showing a marked preference to it over egg-food, and feed it to the young with greater readiness. It is good for old birds in all seasons, is peculiarly suitable at breeding times, and the writer has found nothing equal to it for the young of all kinds, canaries in particular, up to the age of four or five months, as well as in moulting. It will remain in a fit state for food eight to ten days in summer and ten to twelve days in winter. When it does become old, it is readily prepared for use by dipping it in water for three minutes and then squeezing it out. None of the foods for mocking-birds which are sold in the market are made after the formula of this biscuit, and none keep the song and health in as good condition or favor so long life.

SPECIAL FOODS FOR DIFFERENT SPECIES.

Canaries.—The canary should not be fed on hemp seed under any circumstances. Even when these seeds are mixed with the canary, as they

often are in the market, they are to be avoided, since they will shorten the bird's life. Up to the age of four months, rape and canary seed are the best, with three-fourths of a teaspoonful a day, to each bird, of egg-food, or, still better, Macena Biscuit. After that age they should have only rape and canary seed, with a small quantity of green food every day, if it can be secured. The German rape seed is the best, and if it can be procured, will be all that is needed in the way of seed. Canaries are very often injured or killed by sugar and other delicacies.

The Mocking-Bird and Thrush Family.—All kinds of soft-food eaters must be treated with more care than seed-eaters. In this class mocking-birds are the most admired and valued. They need a liberal sup-

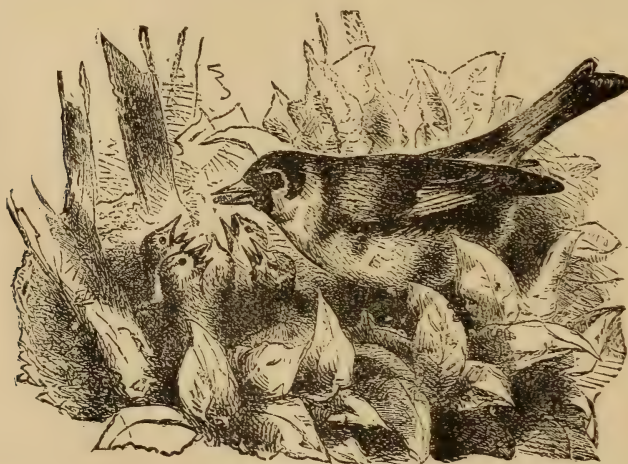


21S. MOCKING-BIRD.

ply of meal-worms, ant's eggs, earth-worms, caterpillars (without hairs), and sometimes green food, such as berries and fruits. Grated carrots and potatoes, meat, and boiled beef-heart are suitable for summer. For use in winter, and for those people who can not get the articles just named, I will give a recipe upon which a superior mocking-bird food can be prepared, which is also excellent for all soft-food, meat and insect eaters:—Chop finely four pounds of beef and dry it well in a stove; grate one and one-

half pounds of carrots, squeeze them out thoroughly, and dry them; grate twelve to fourteen ounces of white bread; grind twelve to fourteen pounds of hemp seed; add the yolks of twelve to fifteen hard-boiled eggs. Mix all of them thoroughly, adding sweet oil or lard until the mixture is soft, *but do not put in a greater supply of oil or lard*, lest fat be engendered too rapidly. If they can be afforded, dried ant's eggs, in any quantity up to a fourth part of the whole, will make the mixture better. If farina be added to this mixture, in the proportion of one-fourth of the whole, good results will follow, though it is not a necessary ingredient. The preparation of this food will make some trouble, but it will well reward the pains in the charms which it adds to the mocking-bird alone, to say nothing of other species for which it is suitable. When once ready for use it can be fed with much less labor than fresh food, is not conducive to disease, as other kinds are, and will remain good for many months. A less amount than the above can be made, of course, but the same proportion of ingredients should be preserved.

Red Bird, Cardinal and their Kind.—Make a mixture of rice (in the husk), hemp seed, sunflower seed, and wheat in the grain. Also, give corn, some fruit, meal-worms, and mocking-bird food made as above directed.



219. GOLDFINCH AND NEST.

Nightingale, Robin, Etc.—For nightingales, robins, some African finches and titmice, make a mixture as follows:—Bake a loaf of white bread very hard and grind or pound it fine; add the same quantity of grated carrots; a like amount of hard-boiled beef heart, ground, chopped, or, better still, grated; a smaller allowance of hemp seed. Thoroughly mix them,

meanwhile adding water until the whole is loose and has a pleasant odor. It is very desirable to mix ant's eggs in this when feeding it.

Lark, Starling, Etc.—To larks, starlings, and the yellow-hammer species, give wheat, oats, canary seed, green food, some earth-worms, meal-worms and ant's eggs. Finely-chopped cabbage, mixed with poppy seed, is especially needed by all of the lark species; and the diet given just above for nightingales and robins is, generally speaking, also good.

The Bullfinch and Linnet Families.—For bullfinches, linnets, chaffinches, goldfinches, siskins, and all of the finch species, make a mixture of three parts of German rape seed, and one each of hemp seed, poppy seed and German millet. Hemp and poppy seed should be given with care, for they produce fat too readily when supplied in excess. Beside the above, give green food and fruits.

Fancy and African Finches.—The chief food of these is white (not yellow) millet and canary seed; other articles being rape, flax and poppy seed, and a little green food.

Fancy Chickens.—For these, make a mixed food of fruit, crumbs of bread, rice (boiled dry), yolks and shells of eggs, meats and other articles from the table, and ant's eggs. Now and then give strawberries, blackberries, huckleberries, grapes and plums.

Parrots.—Large parrots with strong beaks should have corn, oats, hemp seed, sunflower seed, millet, boiled rice, milk, bread, ant's eggs, potatoes, nuts, grapes, fruits, and small seeds in general. Salt in bits or crystals should be constantly within reach. Bitter almonds and parsley are poisonous for these birds. It may be said, apart from the question of food, that care should be taken to particularly avoid draughts of air and direct rays of the sun. The bird should have a daily bath, or the whole body be sprinkled with water. A piece of wood for the parrot to bite is requisite to the proper growth of the beak, and should always be kept in the cage.

DISEASES AND THEIR TREATMENT.

From foregoing observations it will be inferred that the most common causes of sickness in cage birds are unnatural, improper and excessive food and drink, exposure to draughts and extremes of temperature, filth, and vermin. It follows that an avoidance of such influences will prevent the occurrence of many ills. In general, when a bird shows any evidence of sickness, the appropriate diet, as detailed above, should be rigidly observed. In the reader's endeavor to discover what disease is affecting a bird, too much care can not be used to avoid an error which is entirely too common, namely, the forming of a conclusion upon an insufficient study of the patient's

symptoms. The inexperienced fancier is prone to suspect the existence of a disease, and then quickly decide that it is present in a given case, because he finds one or two symptoms which are known to attend it, though a further investigation might detect others which would show that another and perhaps quite different complaint was at hand.

HOARSENESS.—COLD.—CATARRH.—“ASTHMA.”

Hoarseness, or cold in the head, quite frequently manifests itself in song birds, and only less so in talking birds. It arises from draughts, too cold drink and baths, bad seed, and excessive singing or talking. When the first two are the cause, keep the bird in a warm, very moist atmosphere, both day and night, deprive it of the bath, give warmer water for the drink, and feed lettuce seed. If bad or spoiled seed be the source of the trouble, change to those which are good. If too much singing or talking is the cause, put the bird in a dark room to shut out all light, and thus stop the use of the voice entirely for some time; but the bird must be kept warm.

Catarrh is often caused by draughts of air and too cold baths. The head becomes hot, the nostrils clogged, and the breathing obstructed. If a soft feather be dipped into warm salt-water and gently passed up the nostril, the bird being kept warm for some time, it will be a sufficient treatment. Parrots and other birds that will bite should be covered with some fabric before treatment, to protect the operator and prevent resistance from the claws.

Asthma is a term that is often improperly applied to cases of cold and catarrh. Birds do not have anything that can in any true sense be called asthma. The chest is sometimes by nature too narrow, and thus gives rise to a condition of the voice which some call asthma, but that is incurable.

CONSUMPTION OF THE THROAT AND CHEST.

The special symptoms of consumption of the *throat* are a frequent cough, roughness of the voice, often a failure to take food, either from loss of appetite or from pain in swallowing, attacks of fever followed by shivering being more or less regular. As treatment, keep the bird in a very warm atmosphere, give a little piece of pork and a tea of speedwell (weak for small singing birds; strong for parrots, the thrush family, and large birds in general). This will usually effect a cure in four or five days. If the disease is allowed to run four or five months it will be incurable; hence the importance of early attention and prompt treatment.

The distinctive feature of consumption of the *chest* or lungs is a tubercular deposit in the chest, liver and bowels. The first symptoms are

a "thinning" of the voice and occasional sneezing. When the sneezing comes on in the morning and continues during the day, the lungs have become involved, and eventually a puffed appearance will be manifest in the chest, as represented in the accompanying cut. The treatment consists



220. CANARY WITH CONSUMPTION OF THE CHEST.

in keeping the atmosphere very moist, and at a temperature of from 66° to 72° Fahrenheit (for which purpose a stove with fire can be placed in the room with a vessel of water on it). When the coughing or sneezing becomes continuous, the disease has progressed too far for treatment. A consumptive bird should never be used for breeding purposes.

WORMS IN THE WINDPIPE.

Many birds are killed by worms in the windpipe when their owners are at a complete loss as to the cause. A very destructive parasite finds its way to the throat, locates under the glottis and lives on the blood that it extracts. The wound which it makes begins to swell, and the bird is thus deprived of breath. Parrots, fancy chickens and singing birds are especially liable to such attacks. At first the bird shows signs of general impairment of health; a cough sets in and grows worse; the bird throws its head from side to side as if trying to expel something from the throat; finally

death ensues from suffocation if relief is not given. A bird affected in this way should be completely separated from others, for the parasite is readily transmitted to the well. The killing of the worm is the only cure, and recovery rapidly comes on when this is accomplished. The best method of treatment is to put the bird into dense tobacco smoke, and give meal-worms that have been dipped in sweet oil. Care is requisite to avoid suffocation by the smoke, particularly if it is applied long at a time.

VERTIGO OR DIZZINESS.—EPILEPSY.

Vertigo or dizziness must not be mistaken for *epilepsy* which is considered just below. The former attacks large birds which are kept in *round* and incommodious cages. The bird will turn its head around at times and so continue until it falls from the perch and lies as if dead. Provide a larger and *square* cage. If this does not effect a cure, probably nothing will. Covering the top of the cage with a cloth may afford temporary relief, for it keeps the bird from looking up, which is commonly supposed to be the cause of the disorder; but it will not alone eradicate the malady, which is an affection of the nervous system that is primarily due to the kind of cage mentioned.

Epilepsy is produced in nervous and fat birds by violent shocks, as from a fright or loud noise, which causes them to fall in a sudden fit. Pour cold water on the head until the bird revives; then let it fly for some time in a room. Provide more commodious cages for fat, large birds when they have recovered, give less food than before, and guard against shocks of all kinds, as slamming of doors, explosions, and the like.

LIVER-SPOTS.

This term is applied to an inflammation of the liver the chief external symptom of which is violet spots under the breast. The bird eats but little, owing to pressure on the stomach. It is a good rule to give the sick bird the food it relishes, except such as tends to produce fat. Seed-eaters should have less rape and no hemp. Mix flax and poppy seed in the food. Thrushes and their species require poppy seed. To parrots give no hemp or meat; half-boiled corn is good for them.

INFLAMMATION OF THE BOWELS.

This is a frequent complaint in warm weather, and is caused by an undue supply of heating or stimulating food, fruits, lettuce and other green

feed in excess, and sour, soft food. The disease is very rapid in its course. During the first two days the droppings are green, and afterward become mixed with blood, death soon taking place if relief is not afforded. The bird is very thirsty during the attack. Parrots, canaries, and mocking-birds are particularly subject to the disorder. The patient should be kept warm, and oatmeal-tea (but no water) be given as a drink. From the diet exclude fruits, egg-food, lettuce and other green feed, giving only seed or grain, according to the natural demand of the bird. Meat-eaters must have an abundance of meal-worms and ant's eggs, but no sour or spoiled food. Studiously avoid such of the mocking-bird foods in the market as can become sour. That made upon the formula given on a previous page will not sour, if carefully prepared, and is a good food in this complaint for such birds as those for which it is there recommended.

RUPTURE.

Young birds are more often than the old affected with a disorder called rupture, which is characterized by a lean, transparent, puffed-up appearance of flesh, with small, red veins, and a falling of the intestines into the lower part of the belly, where the skin becomes black before or after death. Though the malady is generally fatal, because not treated soon enough, relief may be afforded by giving a light and simple diet, since too heating and stimulating food is the most common cause, egg-food being quite often the origin of the trouble. This is generally, if not always, a manifestation of inflammation of the bowels and demands substantially the same treatment. Attend to it as soon as it manifests itself.

COSTIVENESS, DIARRHŒA AND DYSENTERY.

COSTIVENESS.—When the action of the bowels is stopped or difficult, mild cases may be cured by giving green food freely, and substituting the juice of yellow carrots for the drink. The bath should be taken away. In obstinate cases, give one to two drops of castor oil, either directly into the throat from a quill or pen, or in the food. It is well, sometimes necessary, to dip a fine, soft brush or feather into oil and very carefully push it into the bowel through the vent.

DIARRHŒA AND DYSENTERY.—These can generally be cured by feeding poppy seed, which should be half-boiled for parrots and thrushes. In the worst cases, particularly if blood is mixed in the droppings, give one or two drops of tincture of opium in the drink. Colds and an unwise selection of food are the chief causes.

OBSTRUCTION OF THE RUMP-GLAND.

The rump-gland secretes the oil for the anointing of the feathers. It may be doubted whether it ever suffers any disorder other than the itching which results from its obstruction in constipation, and which causes the bird to peck and rub it with the beak more than it does when merely oiling its feathers. If cases of obstruction occur, soften the gland well with tepid water and squeeze it out, but do it very gently, since carelessness or rudeness may kill the bird, and will certainly irritate the gland.

SORES ON THE FEET AND EYES.

If ulcers appear on the feet from dirt sticking to them, thoroughly soften the feet with tepid water until the dirt comes off. Then put twelve to fifteen drops of strong tincture of arnica into a glass of water and apply some of it two or three times a day with a feather. Stronger dilutions of arnica may be used on larger birds. Clean cages and proper food are efficient preventives.

The eyes may become sore from filth in the cage, and need the same treatment as is given for sores on the feet. The juice of red beets is recommended, both as a drink and as an external application.

LOSS AND EXCESS OF FLESH.

The use of unnatural food deranges the digestion and causes the bird to disgorge its food, ruffle its feathers, and rapidly lose flesh. Restore the required food and tone up the system by putting a rusty nail in the drinking-water for a few days.

A bird may become fat if it has too much or too stimulating food. The treatment consists in resorting to a simpler diet, including small quantities of ant's eggs, and avoiding the fat-producing articles. A mistaken fondness too often prompts one to pamper birds until they grow fat and dull, and thus indisposed to song and vivacity.

PAIRING FEVER.

By this is meant a condition in the spring, when the inclination to pair is the most marked, in which a bird ceases to sing, is drooping in spirits, grows thin, ruffles its feathers, and possibly dies. Remove the female from sight and put the male in a cooler place. The normal spirits and health will soon return, and no additional care will be needed.

FLEDGING AND MOULTING.

Though the growth of the first coat of feathers and the periodic change thereafter are natural functions, they produce a debility which renders a bird peculiarly susceptible to disease. These changes make a special demand on the digestive organs, and an increased allowance of food should be afforded, though without any delicacies. A rusty nail in the drinking-water will be a useful tonic. Meat-eaters need more worms and ant's eggs than usual. The Macena Biscuit is superior as food during these periods for those birds for which it has been recommended above. Keep the bird in a rather warmer atmosphere than usual as a precaution against colds, and insure rest and quiet, being especially careful not to excite the bird.

LICE.—MITES.—PARASITES.

When a bird is restless, particularly at night, and repeatedly puts its beak under its wings and on other parts, the presence of lice or mites should be suspected, and a minute search be made at once. If they are found, blow *pure* Persian Insect Powder thoroughly into the feathers, in *small* quantities, and into all corners and cracks of the cage. Clean the cage very carefully and anoint all parts of it with kerosene oil, before using the powder. It is best to furnish a new cage after the eradication, until the infested one is surely free from all traces of the pests. Absolute cleanliness is, of course, one of the surest preventives. Both before and after the appearance of lice or other vermin, a supply of sand for dusting and abundant opportunities for bathing are very beneficial. When a cage is infested with red mites, temporary relief can be afforded the bird by spreading a white cloth over the cage at night and removing it after a while. If mites are present, they will collect on the cloth and will be seen as minute red spots. Of course they should be destroyed when removed in this way. This is, indeed, a good expedient to discover their presence.

DEFORMED CLAWS AND BEAKS.—INJURIES.

If the perches are so small that the bird can reach more than three-fourths of the way around them, the whetting on the points of the claws required by nature is not afforded, and they become too long and deformed. The best treatment is to remove the cause by providing thicker perches. If the claws are so long as to present a deformity, hold them up between your eyes and a light, so that you can see the ends of the blood-vessels; then clip them off near those ends, using *scissors*, not a knife. If bleeding

should follow, rub on a few drops of arnica. This kind of deformity should not be neglected, for the bird is in danger of hanging itself by the feet and thus dying.

The beak may be overgrown in consequence of the bird's inability to whet it. It is treated by cutting it off, with the same instrument and with the same caution in avoiding the blood-vessels as are named in clipping the claws. It is best to have an experienced person perform these operations.

When a bird suffers from a wound, fracture of a bone, frost-bites, or other injury, the precision required in treatment is such that no suitable directions can here be given. It is a great mistake to kill a pet bird because it has a broken bone, for it can be successfully treated at one of the bird hospitals which are found in some of the larger cities; but no time should be lost in sending it to such a place, if it is to be sent at all. If any parts have been nipped by the frost, put on a few applications of a weak dilution of arnica, followed by an anointing with oil.



MATERIA MEDICA.

THE remedies mentioned in this work are now to be considered with reference to their form, strength and mode of administration, a few being omitted because the requisite particulars have been given as they have been prescribed. For two reasons the size and frequency of the dose have generally not been described in the treatment of the diseases: First, the *popular* names of medicines are often misleading and many people, prone to administer a remedy which, in their experience, passes under a given name that happens to be the same as the one recommended in a medical book, oftentimes commit great errors; but, if they must look elsewhere to ascertain the dose, as they must in this book, they will also learn just what remedy is intended by the name that is found in the treatment. Second, the virulence of the symptoms and the age, constitution and strength of the patient will differ so much that it has been deemed best to leave the size and frequency of the dose to the judgment of the reader, after giving the general directions embodied below under "Dose."

Choice of the Remedy.—The reader will sometimes be in doubt which of the remedies prescribed for a given disease he should adopt. For obvious reasons that question cannot be here answered in detail. The reader must depend upon his *observation*—as the physician does. Let him study the case *carefully*, comparing the symptoms noted for each remedy, and choose that one whose symptoms the *most nearly* correspond to those of the patient. Rarely will a patient show *all* the symptoms which are mentioned as calling for a given remedy; nor will he often present the symptoms that call for one remedy without showing *some* which indicate another remedy. *Watch the case closely so as to determine when it has become so modified as to need a change of medicine.*

Forms of Remedies.—*Tinctures.*—A tincture is an extract obtained by subjecting a drug to the action of strong or dilute alcohol, or whiskey, and is a fluid in form.

Dilutions.—A dilution is made of a given part of a tincture to stated parts of alcohol or water. The *first* dilution, for example, is composed of one part of the tincture to ten of alcohol or water; the *second*, of one part to one hundred, etc. Dilutions and triturations are both thus compounded on the decimal scale, and in this form are found at the apothecaries, being by the latter marked 1x, 2x, 3x, etc. The subjoined illustrations will be of service in using medicines.

1st dilution (1x),	1	part of tincture to	10	of alcohol or water.
2d " (2x),	1	"	100	" "
3d " (3x),	1	"	1,000	" "
4th " (4x),	1	"	10,000	" "
Etc.,	etc.,		etc.	

It will be seen that there is a wide difference between one dilution and another in the amount of the drug involved. Though in some cases it may make no material difference in the effect whether the first or second is used, in others it is absolutely essential to give that which is recommended, particularly in using very powerful or very poisonous drugs which are to be administered in the high dilutions.

Triturations.—A trituration contains a given part of the drug ground with stated parts of sugar-of-milk, being obviously in the form of a powder. The *first* trituration contains one part of the drug to ten of sugar-of-milk; the *second*, one part to one hundred, etc. The characters "1x," "2x," etc., are used to distinguish them. Observe the same cautions about using the particular trituration prescribed as were given above for Dilutions.

Decoctions and Infusions.—A *decoction* is made by *boiling* the medicinal substance in water; an *infusion*, by *pouring* boiling water upon it and allowing it to cool.

Solutions.—These are made by *dissolving* the medicinal substance in some liquid, as alcohol or water. A "saturated solution" is alcohol containing as much of a substance as it will hold in solution.

Lotions or Washes.—These are mixtures of medicinal agents and water, for local use. Formulas are given in another place.

Cerates.—A cerate is a compound of a drug with oil or oily substances, and formulas for the same, with the uses, are elsewhere given.

Ointments.—These are similar to cerates, and their formulas are given hereafter.

Dose, Size and Frequency.—*Size.*—The age, habits, strength and temperament of the patient, the nature and virulence of the disease, and the like, must be considered in determining the size of the dose. Again, different doctors will use widely differing doses. The amounts mentioned in the succeeding pages give a wide range to satisfy these differing condi-

tions, but the authors advise the reader to use the small or medium dose as being the safest, and generally the most efficacious. In many instances the dose is included when a remedy is prescribed in the body of this work, and then that is to be used, *for an adult*. The popular saying that, "if one drop is good, two must be better," must be condemned as most foolish and harmful. *It is always better to give too little medicine than too much.* The doses mentioned in the following pages are designed for an *adult, man or woman*. The subjoined table will enable one to determine what is suitable for children and the domestic animals.

For a child 3 months old, $\frac{1}{10}$ of the dose for an adult.					
"	6	"	"	$\frac{2}{10}$	"
"	1 year	"	"	$\frac{1}{5}$	"
"	2 years	"	"	$\frac{1}{4}$	"
"	3	"	"	$\frac{1}{3}$	"
"	4	"	"	$\frac{1}{2}$	"
"	7	"	"	$\frac{2}{3}$	"
"	14	"	"	$\frac{3}{4}$	"

For a Horse full-grown, 3 times the dose for a Man.					
"	3 years old,	2	"	"	"
"	2	"	$1\frac{1}{2}$	"	"
"	1 year old,	usual dose		"	"
"	6 months old,	$\frac{2}{3}$	"	"	"

For an Ass full-grown, 2 to 3 times the dose for a Man.					
"	1 year old,	usual dose for a Man.		"	"
"	6 months old	$\frac{2}{3}$	"	"	"

For a Mule, same as for an Ass.

For an Ox full-grown, 3 to 4 times the dose for a Man.					
"	1 year old,	1 to 2	"	"	"
"	6 months old,	usual dose for a Man.		"	"

For a Sheep full-grown, the dose for a Man.					
"	6 months old,	$\frac{1}{2}$	"	"	"
"	3	"	$\frac{1}{3}$	"	"

For a Goat, rather more than for a Sheep.

For a Hog full-grown, the dose for a Man.					
"	6 months old,	$\frac{3}{4}$	"	"	"
"	3	"	$\frac{1}{2}$	"	"

For a Dog full-grown, the dose for a Man, less for small breeds.					
"	6 months old,	$\frac{1}{2}$	"	"	"
"	3	"	$\frac{1}{3}$	"	"

Doses for Cats, Poultry and Birds are given with the treatment.

One will sometimes be obliged to divide a grain, drop, drachm, etc., in using the above tables, and this can be done by putting the medicine in water or some kind of harmless triturated solid, *thoroughly mixing*, and dividing into the required amounts. In this way even a grain can be divided as many times as one can wish.

It will often be necessary to use some rough equivalents for drachms, ounces, etc., and the following will generally be exact enough, *except for very powerful or very poisonous drugs*, whose measurement or weight, if they are required at all, must be left to the apothecary.

LIQUID MEASURE FOR THE HOME.

1	teaspoonful	=	60	drops.
1	fluid drachm, or $\frac{1}{4}$ ounce	=	1	teaspoonful.
1	tablespoonful	=	4	teaspoonfuls.
4	fluid drachms, or $\frac{1}{2}$ ounce	=	1	tablespoonful.
2	fluid ounces	=	1	wineglassful.
6	" "	=	1	teacupful.
16	" "	=	1	pint.

The above table applies to fluids of the consistence of water. Laudanum and other tinctures and alcohols are thinner, and hence it will take more drops for a given *bulk*. Oils, on the other hand, are thicker, and a given number of drops or a given bulk will weigh much more than is here indicated, and this is likewise true of syrups.

DRY MEASURE FOR THE HOME.

1	teaspoonful	=	60	grains, or 1 drachm.
1	tablespoonful	=	4	drachms, or $\frac{1}{2}$ ounce.
2	tablespoonfuls	=	1	ounce.

The following apothecaries' tables will be of convenient reference when one is to divide a given amount of medicine into doses.

APOTHECARIES' DRY MEASURE.

20	grains	=	1	scruple.
3	scruples	=	1	drachm.
8	drachms	=	1	ounce.
12	ounces	=	1	pound.

APOTHECARIES' FLUID MEASURE.

60	minims, or drops	=	1	fluid drachm.
8	fluid drachms	=	1	fluid ounce.
16	ounces	=	1	pint.
2	pints	=	1	quart.

Frequency.—The activity of the disease, the violence of the symptoms and effects produced by a medicine must be considered in fixing the frequency of the dose. In violent, rapid and dangerous complaints, as cholera, croup, convulsions, diphtheria, oncoming fever, and other *acute* disorders, the remedies may be repeated from every ten minutes to every hour or two, the intervals being lengthened as the symptoms abate. In *chronic* cases, when a remedy is to be continued a long time, one, two or three doses a day will be suitable; but in these it is best to change the

remedies so that a particular one will not be given more than ten days or two weeks at one time.

Alternation of Remedies.—When one is told, for example, to give two remedies “in alternation every hour,” *each* is to be used every two hours, a dose of the other being given at the intervening hour, *so that the patient gets medicine every hour*; if they are to be given “in alternation every two hours,” the patient gets medicine every two hours, each kind being taken every four hours. It will obviously be difficult to ascertain the separate effects of a particular remedy when thus alternated, and it is therefore a good rule not to resort to this method if one can without it be reasonably certain what course to pursue.

Medicine Chest.—Those who wish to fill a chest or case for family use will be assisted in their selection by the following list of remedies which are oftenest used (those in most frequent demand being marked with an asterisk, and the signs “1x” “2x,” etc., being explained above):—
 *Aconite, 2x; *Antimonium Tartaricum, 2x; *Arsenicum Album, 3x; Baptisia, tincture; *Belladonna, 2x; Bromide of Camphor, 1x; Calcareo Carbonica, 3x; *Cantharis, 2x; *Chamomilla, 2x; China, 1x; Cimicifuga, tincture; *Colocynth, 3x; *Gelsemium, 2x; Hepar Sulphuris, 3x; Hydrastia, tincture; Ignatia, 3x; *Ipecac, 1x; Iris Versicolor, 2x; *Kali Bichromicum, 2x; Mercurius Corrosivus, 6x; Mercurius Iodide, 3x; *Mercurius Solubilis, 3x; *Nux Vomica, 3x; *Phosphorus, 3x; *Podophyllin, 2x; Pulsatilla, 3x; Rhus, 2x; Santonine, 1x; Spongia, 2x; *Veratrum Album, 3x.

Some common and valuable remedies, as camphor, Pond's Extract, chlorate of potash and arnica, are so generally found in the household that they are not included above. One to two ounces each will be an appropriate quantity. Medicines thus kept for the family are better preserved in a suitable case or chest, and, at any rate, the light and air should be excluded. Colored glass bottles afford the best protection. The bottles should be kept corked and their corks never be exchanged. The medicines can be procured at any well-appointed drug-store, though it is important that one be sure that he gets them of a dealer who is *known* to keep first-class drugs. Those who are not in communication with such a reliable dealer can correspond with the publishers of this book, who will give the desired information, or secure the medicines or case.

Articles in Frequent Demand.—Too many households are destitute of the common remedies and appliances which are in every-day demand, and thus inconvenience is imposed upon the family in ordinary emergencies, and upon the physician when he is called. Every family will have occasion to use all of the following, in making lotions, liniments, etc., and

the most of them will be frequently needed:—Graduated glass, for the measurement of liquids; medicine dropper; atmospheric thermometer; clinical thermometer, to determine the temperature of the body; fountain syringe; hand ball syringe (3 ounce); adhesive plaster; oil-silk; lint or bathing; absorbent cotton; bandages (2 inches wide); camel's-hair brushes; linseed meal, for poultices; mustard, for an emetic; Pond's Extract; lime-water; lime-water and oil liniment (a quart), for burns; vaseline or cosmo-line; glycerine; olive or salad oil; tinctures of arnica and calendula; alcohol; spirits of camphor; castor oil; ointment of zinc; bromide of potassium; chlorate of potash. A large part of these should be at hand.

REMEDIES.

Acid.—See *Carbolic, Gallic, Muratic, Phosphoric, Sulphurous, etc.*

Acidum.—See *Acid.*

Aconite (*Aconitum Napellus*, Monk's-hood).—A tincture derived from the roots or leaves; an invaluable arterial sedative, useful in the commencement of all inflammatory disorders, especially acute fevers, pneumonia, pleurisy and rheumatism; relieves more quickly than bleeding and is far less dangerous. *Dose:* Half-drop to two drops of the tincture every one to two hours; or, to avoid undue irritation, one to five drops of the first or second dilution. For external use, see Formulas.

Æsculus (*Æsculus Hippocastanum*, Horse-Chestnut).—Useful for disorders of the liver, constipation with white lumpy stools, and piles. *Dose:* One to three drops of the tincture or of the first dilution. For local application, see Formulas.

Agaricus (Poisonous Mushroom).—This acts on the nerve-centers and induces intoxication similar to that of alcohol and opium; chiefly used for delirium tremens, congestion of the brain, nervousness, and St. Vitus' dance. *Dose:* One to three drops of the tincture or the first dilution, in water.

Ailanthus (Chinese Tree of Heaven).—This is especially useful in scarlet fever of a malignant, putrid or typhoidal character, in diphtheria, dysentery, malignant ulcerated sore throat, and like diseases. *Dose:* One to three drops of the tincture; or, better for family use, the same dose of the first dilution.

Alcohol (Spirits of Wine).—Pure alcohol is used in making tinctures, and when the other ingredient is soluble in water the alcohol is diluted and preserves the preparation. Various forms are used as stimulants, but great caution is requisite to avoid the forming of the alcohol-habit. Use it only on the advice of the physician.

Aletris Farinosa (Mealy Star-wort).—One of the best tonics known in all cases of debility connected with diseases of the organs of generation, all uterine weaknesses, habitual miscarriage, impotence, sterility, and pale, scanty menses. *Dose:* Five to ten drops three times a day.

Ammonia.—See *Ammonium Causticum.*

Ammonium Carbonate (Salts of Ammonia).—Used as a stimulant in low conditions, as in typhoid, typhus and scarlet fevers. *Dose:* One to three grains every two or three hours.

Ammonium Causticum (Ammonia, Aqua Ammonia, Hartshorn).—A powerful stimulant found in nearly every household; used to revive one when fainting or otherwise in need of rapid stimulation. Never hold too close or too long to the nose, for the

gas is an active irritant, likely to do serious injury to the mucous membrane. *Dose:* One to three drops of the first or second dilution, or ten to twenty drops of the aromatic spirits in water. For external use, see Formulas.

Antimonium Crudum and **Muriaticum**.—See *Antimonium Tartaricum*.

Antimonium Tartaricum (Tartar Emetic).—A powerful emetic in sufficient quantities; is extensively used in the form of "hive-syrup" for cases of croup, but unwisely, for children have been dangerously prostrated thereby. It is very useful in pneumonia, catarrhal croup, bronchitis, and during the progress of small-pox. *Dose:* One to three grains, every one to three hours, of the second trituration.

Apis (*Apis Mellifica*, Poison of the Honey-Bee).—Acts powerfully on the mucous tissues, the tongue, fauces, throat, kidneys and bladder; very efficacious in disorders attended with great swellings of the tonsils and fauces, in scarlet fever when the throat is painfully involved, and when the urine is scanty or suppressed, with irritation of the neck of the bladder. *Dose:* One to three drops of the first or second dilution of the tincture, or one to five grains of the first or second trituration, in water.

Apocynum (*Apocynum Cannabinum*, Indian Hemp).—Do not confuse it with *Cannabis Indica*, or *hasheesh*. *Apocynum* acts upon the urinary organs, and is one of the best remedies for ascites or dropsy in any form; also used for menorrhagia and passive uterine hemorrhage. *Dose:* Five to ten drops of the tincture; or a teaspoonful of an infusion made of two ounces of the fresh root and a pint of boiling water.

Arnica (*Leopard's Bane*).—Useful for internal injuries, certain forms of fever, rheumatism, and for external sprains and bruises. *Dose:* One to three drops of the tincture, or of the first or second dilution, in water every one or two hours. For external use, see Formulas.

Arsenic.—See *Arsenicum*.

Arsenicum (*Arsenicum Album*, Arsenic, Arsenious Acid).—Extremely poisonous in a pure state, but a valuable remedy when sufficiently diluted; has a very wide sphere of action, there being few disorders which do not call for it in some of their stages; particularly adapted to low states of the system, exhausting diseases, profuse diarrhœa and vomiting with threatened collapse; intermittent fevers, certain conditions in typhoid fever, rheumatism, neuralgia, etc. *Dose:* Never to be used in domestic practice stronger than the third dilution or trituration, one to five drops of the dilution and one to three grains of the trituration being suitable for the dose. This dose may be repeated at intervals, but caution is needed if it is continued for a considerable time.

Arsenicum Iodide.—See *Iodide of Arsenic*.

Asafœtida (*Narthex Asafœtida*).—The dried juice or gum is used; a powerful stimulant and anti-spasmodic; useful in the nervous disorders of females, hysteria, epilepsy, St. Vitus' dance, convulsions of children, and almost every variety of nerve-diseases. *Dose:* One to three grains, in the form of a pill. It is often used as an injection during spasms, one or two drachms being rubbed up with warm water into an emulsion.

Baptisia (*Indigo-weed*).—A tincture; acts chiefly on the fluids of the body when decomposition is indicated, as in typhus, typhoid and other low fevers. When given early, it has aborted or broken up such disorders. *Dose:* One to five drops of the tincture every one, two or three hours.

Baryta Carbonica (*Carbonate of Baryta*).—Used for enlargement of the tonsils, especially chronic cases, and for relaxed, easily-inflamed throat, with hoarseness. *Dose:* Two or three grains of the second trituration.

Belladonna (*Deadly Nightshade*).—A tincture made from the stems, leaves and flowers; extremely poisonous in large doses, but a household remedy in a diluted form; acts principally on the brain and nervous system; especially useful for delirium from

active congestion, congestive headache with flushed face and dilated pupils, convulsions, and sore throat; also serviceable in the prevention and treatment of scarlet fever; some forms of neuralgia, rheumatism and other painful disorders are relieved by it. *Dose:* One to ten drops of the first or second dilution of the tincture, or one-eighth of a grain of the extract—the latter, however, not being suitable for domestic prescription. For external uses, see Formulas.

Bichromate of Potash.—See *Kali Bichromicum*.

Bin-iodide of Mercury.—See *Mercury*.

Bismuth.—The sub-nitrate is most often used; principally given for dyspepsia, vomiting, diarrhoea, chronic inflammation of the stomach, and other digestive troubles; combined with pepsin, it is excellent for water-brash. *Dose:* Five to ten grains. For external use, see Formulas.

Borax.—Acts on the mucous surfaces, and useful in sore mouth of nursing babes, thrush, and catarrhal affections of the stomach and bowels. *Preparations:* As a wash for the mouth, put ten to fifteen grains in four ounces of water; for catarrh of the bowels, this may be given in teaspoonful-doses. A half-drachm to a pint of water makes a good lotion for cracked nipples, or an injection for the vagina.

Bromide of Ammonia.—Valuable in many nervous disorders. *Dose:* Five to fifteen grains.

Bromide of Camphor.—Has no equal in the treatment of cholera-infantum, cholera morbus, infantile convulsions during teething, menstrual headache, and hysteria. The best form for family use is the first trituration. *Dose:* One to five grains of the trituration just described every half-hour to two hours.

Bromide of Lithium.—Well suited to various nervous disorders. *Dose:* Three to ten grains.

Bromide of Potassium (Potassa Bromide, Kali Bromidum).—For general purposes this is the best and the most used of all the bromides; yet much harm results from its indiscriminate or long-continued use, as it deteriorates the blood and disposes the system to sores and abscesses; useful in epilepsy, hysteria, delirium tremens, convulsions, whooping-cough, headache, and sleeplessness; for epilepsy, it is better to combine two parts of it with one of bromide of ammonium. *Dose:* Five to thirty grains; the latter (thirty grains) being suitable for delirium tremens, repeated at short intervals until the patient is quiet.

Bromide of Sodium.—Serviceable in nervous disorders. *Dose:* Five to fifteen grains.

Bromide of Zinc.—*Dose:* One-fourth to one grain.

Bryonia (Bryony).—Suitable for acute and chronic rheumatism, lumbago, pleurisy, peritonitis, bronchitis, pneumonia, bilious remittent fever, certain conditions in typhoid fever, stitches in the chest, headache which is worse on motion, congestion of the liver with pain in the right shoulder. *Dose:* One to five drops of the second or third dilution will be best suited to family use.

Cactus Grandiflorus (Night-blooming Cereus).—Acts on the circulation, especially the heart, and useful for palpitation from any cause, particularly when attended with a sense of constriction and cramp-like pains in the region of the heart. *Dose:* One to five drops of the first or second dilution, in water.

Calcareæ Carbonica (Carbonate of Lime).—Used for scrofula, rickety constitutions disposed to coughs, colds and diarrhoea, for slow teething in children, and for chronic eruptions. *Dose:* Three to five grains of the first or second trituration, or a teaspoonful of lime-water in milk.

Calcareæ Phosphorica (Phosphate of Lime).—For slow formation of bone in children, vomiting, diarrhoea, and cold states of the body. *Dose:* Same as *Calcareæ Carbonica*.

Calendula (Marigold).—The tincture is made from the leaves and flowers, and is of great value as an application to wounds when the flesh is torn, to old ulcers, and to suppurating sores. See Formulas.

Camphor.—The tincture of camphor-gum is kept in nearly every house, but is not used with the caution which is demanded in view of its poisonous effects in large doses; is useful in colds, colic, the first stages of catarrh, in cholera, vomiting, diarrhœa, sunstroke, and cases, in general, which are preceded by chills, and those attended with cold sweats, yawning and fainting; may be given by inhalation, as in fainting and sunstroke, or be taken internally on sugar. *Dose*: One to five drops; in cholera, five to twenty drops every five to thirty minutes until reaction sets in. For external use, see Formulas.

Cantharis (Spanish or Blistering Fly).—Principally used internally for urinary disorders and skin diseases; externally, as a counter-irritant and to produce blisters; very valuable in acute inflammation of the kidneys, bladder and urethra; is indicated by frequent urging to urinate, with scanty, high-colored urine, and sometimes albuminous discharges; also in suppression of urine from acute inflammation. *Dose*: Put five or ten drops of the tincture in four ounces of water and give a teaspoonful at a dose. For external use, see Formulas.

Carbo Vegetabilis (Charcoal).—Obtained by burning wood in a close vessel; is triturated and used in many ways, chiefly for chronic disorders of the stomach with flatulence, foul belching and discharges; also as an application to ulcers and all surfaces exuding an offensive discharge. It may be triturated with sugar-of-milk and be taken in the form of tablets or in finely-ground powder. The powder is also sprinkled over sores. For poisoning by arsenic it should be freely given in milk or water. Keep it dry and away from the air.

Carbolic Acid.—Obtained from coal-tar, in color and taste resembling creosote; when pure, it is in the form of crystals, but is reduced to a solution when exposed to heat, and may be held in solution by the addition of a few drops of glycerine; is a *violent poison*, not fit to be kept about the house except in a diluted form, and then to be studiously kept out of reach of children. It is an excellent application for wounds, old sores and skin diseases, and for such use one part of the pure acid to one hundred parts of water or vaseline will be suitable. It is also taken internally to stop vomiting. *Dose*: A teaspoonful of a dilution composed of two drops of the acid and two ounces of water is suitable for internal use.

Caulophyllum (Blue Cohosh).—Chiefly used for menstrual disorders, especially when the flow is scanty and attended with cramps and spasmodic pains, and for irregular and deficient pains in labor; also for rheumatism of the joints. *Dose*: Five to twenty drops of the tincture, the latter dose being given every half-hour to one hour to regulate the pains of labor.

Causticum.—Useful for cough, with loss of voice and relaxation of the vocal cords, and for relaxation of the neck of the bladder. *Dose*: One to five drops of the first or second dilution.

Chamomilla (Chamomile Flowers).—In some form, this is one of the most popular of domestic medicines; it acts upon the nervous and digestive systems, there being few disorders of the stomach and bowels of children, especially during teething, which are not relieved by it; it is of great service in convulsions, restlessness, and fretfulness. *Dose*: One to five drops of the tincture. A tea made from the flowers is also suitable for use.

China (Tincture of Cinchona).—Used as a tonic when the system has been exhausted by a loss of fluids, diarrhœa, or a too profuse menstrual flow. *Dose*: Five to thirty drops of the tincture; or put a teaspoonful of the tincture in four ounces of water, and take a teaspoonful of this solution for a dose.

Chlorate of Potash or Potassium.—See *Potassa Chlorate*.

Chlorate of Potassa.—*See Potassa Chlorate.*

Chloride of Mercury.—*See Mercury.*

Cimicifuga (Black Cohosh).—Very useful for acute and chronic rheumatism, affections of the uterine organs, particularly menstrual irregularities, as suppressed, painful or excessive menstruation, for chorea when caused by rheumatism, sleeplessness, hysteria, and other nervous affections. *Dose:* Three to ten drops of the tincture in water, the latter dose three times a day being suitable for chronic rheumatism and other long-continued complaints.

Cina (Worm-Seed).—Given for worms and disorders incident thereto. *See* Santonine, *Cinchona.*—*See China.*

Cocculus (Indian Berries).—Acts on the nervous system, affecting motion, and being thus useful in paralysis; also in giddiness, sea-sickness, disordered digestion, and chronic spasm of the bowels after eating. *Dose:* One-half to one drop of the tincture twice a day; or one to five drops of the second or third dilution more often if desired.

Coffea (Caffea Arabica).—Obtained from coffee in the crude state; acts on the nervous system, and in the tincture, or the alkaloid caffeine, is useful for headache and sleeplessness; also as an antidote in poisoning by opium. *Dose:* For general use, one to five drops of the third dilution; for an antidote for opium, one-fourth grain of the caffeine.

Colchicum (Meadow Saffron).—A tincture or wine is made from the tuber and seeds; very valuable for gout and rheumatism. It is a powerful emetic and cathartic when given in large doses, and care should be taken not to thus disturb the stomach and bowels. *Dose:* Wine of the seeds is best for family use, three to ten drops in water every two or three hours; or two to five drops of the first dilution of the tincture.

Collinsonia (Stone-Root).—Useful for indigestion, flatulence, constipation, and disorders of the rectum. *Dose:* Ten to twenty drops of the tincture.

Colocynth (Colocynthis, Bitter Cucumber).—The compound extract is largely used as a cathartic, but its leading use in small doses is for colic with diarrhœa, dysentery, neuralgia, cramps in the legs during cholera morbus, and for other disturbances of the stomach and bowels. *Dose:* One to five drops of the second dilution of the tincture; for a cathartic, a pill containing five grains of the compound extract.

Conium (Spotted Hemlock).—Used principally for cancerous and strumous diseases of old people, and for inflammation of the mammary and other glands; as an application for inflammation and hardening of the breasts it has no equal. A plaster may be made from the extract. *Dose:* One to five drops, the first and second dilutions being the only suitable forms for family use.

Convallaria (Lily of the Valley).—Fluid extract of the flowers; one of the most valuable medicines in nervous and organic diseases of the heart, for palpitation, irregular and intermittent pulse, and weak heart with dropsy. *Dose:* Five to fifteen drops three or four times a day.

Creosote (Kreasote).—Useful to arrest vomiting, often relieving when all other expedients fail, being particularly suitable for the vomiting of sea-sickness, cholera infantum and pregnancy. It is used to allay toothache, being put into the cavity, but care should be then taken not to touch the gums or cheeks, as it is a powerful caustic. *Dose:* One-tenth to one-half of a drop in acidulated syrup; or one to two drops of a dilution made of one part of the drug to one hundred of water. For local use in toothache, see Formulas.

Croton Oil.—*See Croton Tiglium.*

Croton Tiglium (Croton Oil).—A powerful cathartic, sometimes used to assist in expelling tape-worms; in attenuated forms useful for cholera, diarrhœa and eczema;

and used also on the skin as a counter-irritant. *Dose:* One to two drops, as a cathartic; for other purposes, one to two drops of the second dilution, in water.

Cuprum (Metallic Copper).—Very serviceable for cramps, spasms and convulsions, especially when they result from vomiting, diarrhœa, or other derangements of the digestive track, particularly applicable to Asiatic cholera, especially after the cramps have set in. It should be used in the form of a solution or trituration, the acetate of copper being the best. *Dose:* One to five grains of the second trituration.

Digitalis (Purple Fox-glove).—A powerful tonic and diuretic; it acts particularly on the heart, and is suitable for dropsy arising from heart-complications, for dropsy of the chest, palpitation and other irregularities of the heart's action. *Dose:* Three to ten drops of the tincture. An infusion of the leaves is often used and is convenient; put one drachm of the leaves in a half-pint of boiling water and take one-half to one teaspoonful three times a day.

Drosera (Round-leaved Sundew).—Principally used in whooping-cough, but serviceable in all spasmodic coughs, especially if attended with vomiting. *Dose:* Put two teaspoonfuls of the tincture into four ounces of a syrup of white sugar, and take one-half to one teaspoonful. This is an excellent cough-syrup.

Dulcamara (Bitter-Sweet, Woody Nightshade).—Useful for eruptions and affections arising from cold, for diarrhœa, rheumatism and other disorders arising from colds. *Dose:* One to five drops of the second or third dilution; or a teaspoonful of a decoction made of an ounce of the leaves and a pint of boiling water.

Elixir Nitrogenized Iron and Digitalis.—*See Ferrum.*

Ergot (Spurred Rye).—Chiefly used in labor, to produce increased action or pain; also to stop flooding after delivery, and when the flow continues too long; acts well in profuse menstruation. *Dose:* It is not suitable for domestic use *during* labor, as some knowledge of this function is then requisite in prescribing it. For severe hemorrhage *after* labor, give at once fifteen drops of Squibb's ergot in water, repeated every fifteen to thirty minutes until relieved.

Eucalyptus (Australian Gum-tree).—A most valuable remedy for all catarrhal affections of the bronchi, bowels, bladder and throat, for flatulence, diarrhœa from a cold, and for ague. *Dose:* Five to ten drops every two or three hours.

Euphrasia (Common Eye-bright).—Acts on the eye, and particularly useful in its acute catarrhal affections. *Dose:* One to five drops of the tincture. A local application for the eyes is made of fifteen to twenty drops of the tincture to a wineglassful of water.

Ferrum (Iron).—A powerful tonic without an equal in the treatment of chlorosis, anæmia, and other conditions indicating a debilitated state of the blood. Of the great number of preparations of this metal, tincture of iron is the best and most common, the dose being three to ten drops in water or syrup; since it affects the teeth, it is better to take it through a quill or glass tube. The elixir nitrogenized iron and digitalis is serviceable for conditions attended with deficient heart-action, the dose being one-half to one teaspoonful three times a day. Iron is too indiscriminately used, and it is better to take it upon the advice of a physician.

Ferrum Sulphuris.—*See Ferrum.*

Fowler's Solution (Arsenical Solution).—Convenient form for the use of arsenic. *Dose:* One-half to three drops two or three times a day, after eating.

Gallic Acid.—Made from nut-galls; a powerful astringent, used to stop bleeding, and especially serviceable in hemorrhage of the kidneys. *Dose:* Five grains every two to six hours, in glycerine.

Gelsemium (Gelsemium, Yellow Jessamine).—Used for affections of the nervous system and muscles, for remittent, scarlet and nervous fevers, neuralgia, and the

primary stage of measles. *Dose*: This is an extremely poisonous drug in the strong tincture; use only the second or third dilution, one to five drops in water.

Glonoine (Nitro-glycerine).—Very poisonous, as active as prussic acid; operates on the brain and cerebral circulation; useful for sun-stroke, congestive headache, vertigo, and violent convulsions. *Dose*: One to three drops of the second or third dilution in water.

Graphites (Black Lead, Plumbago).—Used both internally and externally for unhealthy states of the skin, chronic ulcers, eczema, cracks and excoriations, especially on the nipples. *Dose*: One to three grains of the third trituration two or three times a day. For external use, see Formulas.

Hamamelis (Witch-hazel).—Acts principally on the veins, relieving varicosis, phlebitis and hemorrhage, and is invaluable for piles and for bleeding from the nose and stomach. *Dose*: Five to ten drops of the tincture, in water, to stop bleeding. For local uses, see Formulas. Pond's Extract is a convenient form for local use.

Hepar (Hepar Sulphuris, Liver of Sulphur).—Useful for affections of the glands and skin, chronic swellings and abscesses, ulcers, scaly eruptions, and catarrhal affections of the respiratory track. *Dose*: Three to five grains of the third trituration.

Hydrastis (Hydrastia, Hydrastin, Golden Seal).—Used in both the tincture and the powder, the former, or fluid hydrastia, being the more convenient; acts on the mucous membranes, glands and skin; is an excellent local remedy for various catarrhal affections of the mucous membranes, eyes, nose, urethra, vagina and rectum, as well as for cracked nipples, ulcers and fissures. *Dose*: Three to ten drops of the fluid two or three times a day. A suitable lotion is made of one to two drachms in a half-pint of water.

Hyoscyamus (Henbane).—Is poisonous, accidents sometimes happening by mistaking its root for common parsnip; largely used as a narcotic in place of opium, though its administration in this way should be under the advice of a physician; useful for delirium tremens, and the delirium attending typhus and puerperal fevers, convulsions, sun-stroke, and fainting fits of hysteria. *Dose*: One to two grains of the extract, or one to five drops of the tincture, or the first or second dilution.

Ignatia (St. Ignatius' Bean).—Very poisonous in large doses; useful for hysteria, convulsions of children, sleeplessness, the consequences of fright, nervous dyspepsia, and other affections of the nervous and digestive systems. *Dose*: One to five drops of the second or third dilution of the tincture.

Iodide of Arsenic.—Especially adapted to cases of a putrid nature, or those attended with excoriating discharges. Should never be used stronger than the third trituration for adults, and sixth for children.

Iodide of Mercury.—See *Mercury*.

Iodine.—Chiefly used for glandular swellings, affections of the joints, rheumatism, and scrofulous affections generally. For internal use it is usually combined with some other substance to form an iodide. Externally it is used in the tincture. *Dose*: One to three drops of the first or second dilution. For external use, see Formulas.

Ipecac (Ipecacuanha).—Used for nausea, vomiting and other disorders of the stomach, diarrhœa, dysentery, whooping-cough, colds, and spasmodic croup. As an emetic, in large doses, it is superior, since it causes but little prostration and is prompt in its effects. *Dose*: Two to fifteen drops of the syrup; or put twenty drops in a wine-glassful of water, and take a teaspoonful at a time; the first and second dilutions are convenient, one to five drops being the dose. If it is desired to use as an *emetic*, take twenty to thirty grains in a half-pint of water.

Iris Versicolor (Blue Flag).—Principally used for headache, especially sick-headache which comes on periodically; summer complaint; cholera infantum when vomiting

is a prominent symptom, with bilious discharges. *Dose*: One-half to one drop of the tincture, or of the first or second dilution; for sick-headache, repeat every fifteen minutes until relieved, and two or three times a day thereafter to prevent a recurrence.

Iron.—*See Ferrum.*

Kali Bichromicum (Bichromate of Potash or Potassa).—In the crude form (crystals) it is very poisonous, but in the dilutions and triturations it has much efficacy in the treatment of catarrh, bronchitis, croup, sore throat and diphtheria. It is used both internally and externally. *Dose*: One to three grains of the second or third trituration. For an external wash, put thirty grains of the second trituration in a wineglassful of water.

Kali Permanganate.—*See Permanganate Potassa.*

Kreasote.—*See Creosote.*

Lactic Acid (Acid of Milk).—Useful in treating the various forms of dyspepsia, and in the vomiting incident to pregnancy. *Dose*: One to five drops of the dilute acid in water.

Leptandra, or Leptandrin (*Leptandria Virginica*, Culver's Root, Black-root).—When fresh the root acts as an emetic and cathartic, and is useful in the treatment of disorders of the liver and bowels, being a specific for diarrhœa with black, mushy stools. *Dose*: Five to ten drops of the tincture, or three to five grains of the first or second trituration; one to two grains of resinoid leptandra will also be suitable.

Lilium Tigrinum (Tiger Lily).—Acts on the reproductive organs; useful for various diseases of the uterine organs and the sympathetic disorders resulting from reflex irritation from these parts. *Dose*: One to three drops of the first, second or third dilution.

Lycopodium (Club Moss).—Used in the disorders of the digestive track, and in some of those of the urinary organs; in the pure state it is almost inert, but valuable in triturations. The dry powder is used externally for excoriations in the folds of the skin of fleshy children. *Dose*: One to five grains of the second trituration.

Mercurius.—*See Mercury.*

Mercurius Bin-iodide.—*See Mercury.*

Mercurius Corrosivus (Corrosive Sublimate).—For effects, see Mercury; especially useful for dysentery with bloody stools and great pain in the rectum and bladder; for Bright's disease and acute inflammation of the kidneys. *Dose*: One to five grains of the third to the sixth trituration.

Mercurius Dulcis (Calomel).—*See Mercury.*

Mercurius Iodide.—*See Mercury.*

Mercurius Solubilis.—*See Mercury.*

Mercury (*Mercurius Solubilis*, *Mercurius Dulcis*, Calomel, Iodide of Mercury, *Mercurius Iodide*, *Mercurius Bin-iodide*).—Mercurius, or mercury, has been so much abused that its use was once almost abandoned, but it has now gained a great repute in small doses; used for various diseases of the blood, glands, and the mucous membrane of the digestive track, including diarrhœa, dysentery, liver-complaint, rheumatism, scurvy, syphilis, and Bright's disease. Ointments and lotions are made for parasites and other affections of the skin. *Dose*: One to five grains of the second or third trituration. For external use, see Formulas.

Morphia.—*See Opium.*

Moschus (Musk).—A powerful nerve-stimulant, very useful in hysterical paroxysms, nervous palpitation, and nervous excitement. *Dose*: One to five drops of the second dilution of the tincture, or one to five grains of the third trituration.

Muriatic Acid.—*See Nitro-muriatic Acid.*

Nitric Acid.—*See Nitro-muriatic Acid.*

Nitro-muriatic Acid (Aqua Regia).—Composed of nitric and muriatic acids and used for much the same purpose as these acids separately, as in certain forms of dyspepsia, low fevers, diseases of the liver, and affections of the mucous membranes. *Dose:* Use only the first or second dilution—one to five drops largely diluted with water.

Nitrum (Potassa Nitrate, or Nitrate of Potash, Nitre).—Acts on the kidneys and causes an increased flow of urine; used in fever-disorders. Benefit arises to asthmatic persons by inhaling the smoke which arises from a burning paper that has been previously saturated with a strong solution and then dried. *Dose:* Five to ten drops of the solution or five to ten grains of the salts, largely diluted with water.

Nux Vomica (Dog-button).—Very poisonous in large doses; in suitable doses a powerful nerve-tonic, and useful for many disorders of the nervous system, and, through that system, for the treatment of neuralgia, dyspepsia, indigestion, constipation, colic, nervous prostration, sick-headache, paralysis, neuralgia, etc. *Dose:* As a powerful tonic, one to five drops of the tincture, or one-tenth to one-fourth of a grain of the extract; but for family use one to five drops of the second or third dilution of the tincture will be the most advisable.

Opium (Papaver Somniferum, Poppy).—Many forms of opium are in use, as morphia, morphine, codeia, narcotina, laudanum, paregoric elixir, etc. It is a powerful narcotic, used to allay pain and induce sleep. It should be given only under the direction of a physician, and never be continued more than a short time, as the opium-habit is easily formed, and with difficulty broken. One to five drops of the second or third dilution may, however, be used in brain fever and some other nervous disorders.

Oxide of Zinc.—Used externally as an application to burns, scalds, chafing, cracked nipples, and moist eruptions of the skin. See Formulas.

Permanganate of Potash.—See *Permanganate Potassa*.

Permanganate Potassa (Kali Permanganate).—Used as a wash in various diseases of the mucous membranes, one to three grains to an ounce of water.

Petroleum (Rock-Oil).—Principally used as an external application in rheumatism, stiff joints, inflamed glands, and sore throat. Internally, it relieves sick-headache, nausea, vomiting, and various nervous disorders. *Dose:* One to three drops of the third dilution. Cosmoline and vaseline are prepared from petroleum and make an excellent body for ointments, cerates, etc., since they do not become rancid, and such preparations are useful for burns, scalds, and other forms of irritation of the skin.

Phosphide of Zinc (Zincum Phosphide).—Acts on the nervous system; useful for nervousness, sleeplessness, chorea, epilepsy, neuralgia, chronic headache, depression of the mind and insanity. *Dose:* One-twentieth to one-tenth of a grain; or one to two grains of the second trituration.

Phosphoric Acid.—Diluted; a powerful tonic, useful in low states of the system induced by exhausting fever, consumption, or other wasting disease. *Dose:* Three to ten drops of the first dilution in water every one to six hours, according to the urgency.

Phosphorus.—Useful in nervous debility, neuralgia, paralysis, organic disease of the liver, inflammation of the lungs, etc. It should be used only in the second or third dilutions. *Dose:* One to five drops. There are many preparations of phosphorus, some of which are mentioned, with the dose, in this book, as phosphates, phosphites, and hypophosphites.

Phytolacca (Poke-root).—In large doses it is emetic and cathartic, and very large doses have produced death; used in rheumatism, piles, diseases of the skin, glandular swelling, as in the breasts, and especially when a scrofulous or syphilitic constitution is the cause. *Dose:* One to five drops of the tincture, or of the first dilution. For external use, add one part of the tincture to five of water.

Picrate of Ammonia.—Not often used in domestic practice, but useful in some cases of nervous disorders, pain in the back of the head, etc. *Dose:* One-half to one drop of a saturated solution.

Picric Acid.—See *Picrate of Ammonia*.

Podophyllin (May Apple, Mandrake).—Useful in biliousness, diarrhœa from disorder of the liver, and dysentery; much used as a cathartic. *Dose:* As a cathartic, thoroughly mix one-fifth of a grain of podophyllin, one-fourth of a grain of nux vomica, and two grains of piperine, and make them into a pill; take one every night if needed. For general use in bilious and digestive disorders, take one to five grains of the first or second trituration.

Pond's Extract—See *Hamamelis*.

Potassa Chlorate.—Acts on the mucous membranes, and is excellent for sore throat, sore mouth, and especially that which is caused by mercury. It is so commonly used that many suppose it is harmless, but care is requisite, since it disintegrates the blood and lessens vitality. *Dose:* One to three grains dissolved in water; for a gargle or wash, a half-teaspoonful in four ounces of water.

Pulsatilla (Wind-flower, Meadow Anemone).—Mainly used for disorders of menstruation, deranged digestion from eating fats, headache from gastric troubles, measles, hysteria, and catarrhal affections of the eyes, ears, nose, vagina and womb. *Dose:* One to five drops of the first or second dilution of the tincture.

Quinia and Quinine.—See *Sulphate of Quinia*.

Rhubarb (*Rheum Palmatum*).—Acts on the digestive canal; is cathartic; in small doses relieves diarrhœa, and is said to give tone to the stomach and bowels. *Dose:* One to two grains of the root, or five to ten drops of the syrup, or one to five drops of the tincture in water or syrup.

Rhus (*Rhus Toxicodendron*, Poison Oak, Poison Ivy).—There are several varieties of rhus, poison ivy and rhus tox. being the best known; used in various acute diseases of the skin, rheumatism, sciatica, lumbago, and in typhoid fever when there are severe rheumatic pains. *Dose:* One to five drops of the first or second dilution of the tincture, in water. Handle the strong tincture with caution, for it acts as a poison the same as the green plant. For external use, see Formulas.

Sabadilla.—It has much the same use as *Veratrum Album*, which see.

Sabina (Savin).—Used chiefly for menorrhagia when the discharge is bright-red, leucorrhœa, difficult urination, and threatened miscarriage. *Dose:* One to five drops of the tincture, or of the first dilution.

Salicylic Acid.—Largely used in acute rheumatism and, alone or in the form of salicylates, has very quickly relieved many cases. *Dose:* Five to twenty grains every two hours, diminishing this as the pain subsides—the physician to determine when it is to be given.

Sanguinaria (Blood-root).—An acrid emetic and narcotic; useful in affections of the lungs, and is an ingredient of many cough-mixtures; also good for recurring sick-headache. *Dose:* One to five drops of the tincture, or of the first dilution.

Santonine (*Artemisia Cina*).—Prepared from the buds of cina, or worm-seed; useful for the expulsion of worms, especially the long stomach-worms. *Dose:* One-half to one grain night and morning, followed by a dose of castor oil; or two or three grains of the first trituration for four or five nights. Since it is poisonous in large amounts, the latter dose is the better for family use.

Scutellaria (Skull-cap).—Suitable for nervous disorders, as palpitation, convulsions and sleeplessness. *Dose:* One-half to one grain or five grains of the first trituration. An infusion may be made and be freely taken until the desired effect is secured.

Secale (Ergot, Spurred Rye).—*See Ergot.*

Sepia (Inky Juice of the Cuttlefish).—Very serviceable in chronic functional diseases of women; best adapted to women who are anæmic and of a delicate constitution, and suffering from scanty menstruation, leucorrhœa, amenorrhœa and menorrhagia. *Dose:* One to five grains of the second trituration.

Spigelia (Pink-root).—Valuable for rheumatic affections of the heart, neuralgic headache, angina pectoris, and some worm-affections. *Dose:* One to five drops of the first dilution; for worms, a wineglassful of a decoction of one-fourth of an ounce of pink-root, one-eighth of an ounce of senna leaves, and a half-pint of boiling water.

Spongia (Roasted Sponge).—Action similar to that of Iodine, though its range is not so wide; useful for affections of the larynx and windpipe, as dryness with hard, dry cough, hoarseness, and croup. *Dose:* One to five drops of the first dilution, in water.

Staphisagria (Stavesacre).—Formerly used only to destroy lice on the body, and to cure toothache; now found useful in various nervous disorders, as vertigo, nausea, sea-sickness, and hypochondria. *Dose:* One to five drops of the second dilution.

Stramonium (Thorn-apple).—Principally given for nervous disorders, the delirium of drunkards, epilepsy, and acute insanity, frequently relieving the raving and inducing sleep; also for spasmodic asthma and croup, being for the former smoked in cigarettes. *Dose:* One to five drops of the tincture, or of the first dilution. For external use, see Formulas.

Strychnia or Strychnine.—This is one of the alkaloids of *nux vomica*, and has much the same effects as the latter; is one of the most violent of vegetable poisons, and should not be used in domestic practice, as the dose, one-two-hundredth to one-fiftieth of a grain, in solution, is too small for non-professional prescription.

Sulphate of Quinia (*Cinchona* Bark).—Sulphate of quinia and cinchona are alkaloids of cinchona bark, and are used both as tonics and anti-periodics; useful in a variety of ailments in which the patient is to be sustained by tonics; as an anti-periodic it has no equal in intermittent fever and other disorders whose paroxysms come on at stated intervals. *Dose:* One to five grains every one, two or four hours during the interval between the paroxysms. It is best to take it under the direction of a physician. There is an unfortunate tendency to take it as a stimulant, and thus a habit is formed, many using it for so-called "malaria," which is often only the quinine-habit.

Sulphur (Brimstone).—Used in treating diseases of the skin and mucous membranes, and many chronic ailments, as rheumatism, gout and constipation. *Dose:* Five to ten grains of the flowers of sulphur, or one to five drops of the first, second or third dilution of the tincture. For external use, see Formulas.

Tartar Emetic.—*See Antimonium Tartaricum.*

Terebinth (Terebinthina, Oil of Turpentine).—Acts chiefly on the mucous membranes; useful for disorders of the urinary organs, and for hemorrhage from the nose, stomach, bladder and womb. In the tympanitic stage of typhoid fever it may be given internally, and be applied externally by means of cloths wet in water and then sprinkled with turpentine, the cloths being well covered to prevent evaporation. *Dose:* One to five drops on sugar; or of the first or second dilution, on sugar or in glycerine. Since large doses are liable to irritate the bladder, the latter is more suitable for domestic use.

Thuja (Arbor Vitæ, Tree of Life).—Acts on the genito-urinary organs; useful for diseases arising from some specific poison which affects these parts, as gonorrhœa, syphilis, and the eruptions and other diseases arising therefrom; has been given internally and applied externally for cancerous and other growths. *Dose:* One to three drops of the third dilution. For use on cancers, take the strong tincture.

Trillium (*Trillium Pendulum*).—Useful for hemorrhages and the flashes of heat

incident to women at the change of life. *Dose:* One to five drops of the tincture, or of the first dilution.

Uranium Nitrate.—Useful in diabetes. *Dose:* One to five drops of the first or second dilution.

Valerian.—A stimulant and anti-spasmodic; useful for hysteria, nervous headache, and the spasms occurring at the menstrual period. *Dose:* Ten to thirty drops every one or two hours.

Valerianate of Zinc.—Used for nervous headache, neuralgia, whooping-cough, hysteria, and chorea. *Dose:* One-fourth to one-half grain, in pills; or one to five grains of the first or second trituration.

Veratrum Album (White Hellebore).—Useful for various disorders of the digestive track attended with a low state of the system; for Asiatic cholera, cholera morbus, and choleric diarrhoea accompanied with coldness, debility, cramps and fainting, it has few equals. *Dose:* One to three drops of the first, second or third dilution.

Veratrum Viride (Green Hellebore, Itch-weed).—Acts on the spinal cord and, through it, on the circulation and respiration; excellent at the commencement of certain forms of fever when the heart's action is violently increased, since it reduces the pulse very rapidly; also suitable for vesicular erysipelas, and may be applied externally in the form of a lotion. It must be used with caution, and is unsafe in domestic practice, unless in the dilutions. *Dose:* Three to five drops of the first or second dilution. For external application, use one part of the strong tincture to three of water.

Viburnum.—See *Viburnum Opulus*.

Viburnum Opulus (Cramp-bark).—Acts on the generative organs; excellent for painful menstruation, after-pains, cramps in the legs and abdomen of pregnant women, and the false pains preceding labor. *Dose:* One to five drops of the tincture.

Viburnum Prunifolium (Black Haw).—Action similar to that of *Viburnum Opulus*, but it is used more especially for threatened miscarriage, with flooding, and for profuse menses. *Dose:* Three to ten drops of the tincture, in water, every one or two hours, or three or four times a day.

Xanthoxylum (Prickly Ash).—Used in spasmodic colic, rheumatism, scanty or suppressed menstruation with cramp-like pains in the ovaries. *Dose:* One to five drops of the tincture, in water.

Zincum Metallicum.—Phosphide of Zinc is the best form for use. See above.

FORMULAS.

The formulas for various lotions, liniments, ointments, cerates, etc., which have been recommended in the body of the book are here given, together with others of superior merit. To insure ease of reference the alphabetical order is adopted, without reference to formal classifications. While a large portion of these preparations can be made at home, it is obvious that some of them can be safely and suitably compounded only by an apothecary. In the case of the latter, the reader can copy the formulas and have them filled, since all pharmaceutical characters are omitted. The brief mention of disorders for which the various formulas are suitable will enable one to find some local application suited to his wants, even when one is not prescribed on a previous page.

Acetic Acid Lotion.—To cure or prevent chafing or chapping of the hands and face:

Acetic Acid,	1 drachm.	
Glycerine,	1 ounce.	
Rose-Water,	4 "	Mix.

Put some in the regular bathing-water.

Aconite Lotion.—Prescribed in various parts of this book:

Strong Tinct. Aconite,	1 ounce.	
Water,	4 "	Mix.

For an application for neuralgia, sciatica, etc., mix equal parts of tincture of aconite, laudanum and sulphuric ether.

Alcohol Lotion.—For night sweats:

Alcohol,	1 ounce.	
Water,	3 "	Mix.

Sponge the body gently with it.

Aloes Ointment.—For cracked lips, hands, and other parts of the skin:

Tinct. Aloes,	1 drachm.	
Glycerine,	9 "	Mix.

Alum Lotion.—For simple inflammations of the eye:

Pure Alum,	1 grain.	
Pure Soft Water,	2 tablespoonfuls.	

Dissolve. Put a few drops in the eye twice a day.

Ammonia Liniment.—For stiff neck, lumbago, and other rheumatic troubles:

Aqua Ammonia,	1 ounce.	
Olive or Salad Oil,	2 "	Mix.

Antimony Lotion.—For acne and other eruptions:

Tartrate of Antimony (pulv.),	1 grain.	
Warm Water,	$\frac{1}{2}$ ounce.	
Glycerine,	$\frac{1}{2}$ "	

Dissolve the antimony in the water, add the glycerine, and mix.

Arnica Lotion.—For bruises and other injuries:

Tinct. Arnica,	1 ounce.	
Water,	4 "	Mix.

Balsam Ointment.—For bed-sores:

Balsam Peru,	2 drachms.	
Spermaceti,	4 "	Mix.

Belladonna Liniment.—For rheumatism and neuralgia:

Tinct. Belladonna,	7 drachms.	
Chloroform,	1 "	Mix.

If too strong, add olive or salad oil.

Belladonna Lotion.—

Tinct. Belladonna,	1 ounce.	
Water,	8 "	Mix.

Belladonna Plaster.—

Extract Belladonna and Beeswax, equal parts; mix and spread. Most druggists have them regularly prepared and they can be obtained in any size desired.

Benzoic Acid Lotion.—For sore nipples and itching of the skin:

Pure Benzoic Acid,	15 grains.	
Distilled Water,	8 ounces.	
Rectified Spirits,	3 drachms.	

Dissolve the acid in the spirits, add the water, and shake until the precipitate which forms is wholly dissolved.

Bismuth Lotion.—For scaly eruptions and excoriations, and for itching of the vulvæ:

Sub-Nitr. Bismuth,	1 drachm.	
Olive Oil,	1 ounce.	Mix.

Bismuth Ointment.—For intense itching and irritation, as in eczema and other skin-diseases:

Nitrate of Bismuth,	30 grains.	
Prepared Lard,	1 ounce.	Mix.

Borated Glycerine Lotion.—For chapped lips and hands and sore nipples:

Borax,	$\frac{1}{2}$ drachm.	
Glycerine,	$\frac{1}{2}$ ounce.	
Rose-water,	8 "	Mix.

Borax Lotion.—For excoriations, and itching of the vulvæ:

Pulverized Borax,	20 grains.	
Distilled Water,	2 ounces.	Dissolve.

Borax Ointment.—For thrush, and itching of the vulvæ:

Pulverized Borax,	1 ounce.	
Glycerine,	4 "	Dissolve.

Butternut-Bark Lotion.—For cuts, stabs, punctures, etc., in horses. Make a strong infusion of butternut bark and apply freely.

Calendula Lotion.—For open sores, cuts and lacerations:

Tinct. Calendula,	1 ounce.	
Water,	3 "	Mix.

Camphor Liniment.—For chicken-pox, scarlatina, and itching:

Tinct. Camphor,	1 ounce.	
Olive or Salad Oil,	3 "	
Mix until dissolved.		

Camphorated Borax Lotion.—For dandruff, ring-worm, tetter, etc.:

Pulverized Borax,	1 drachm.	
Spirits camphor,	1 ounce.	
Glycerine,	$\frac{1}{2}$ "	
Soap Liniment,	2 "	
Water,	12 "	Mix.

Carbolated Cerate.—For burns and itching of the skin:

Pure Carbolic Acid, 10 drops.
Vaseline, 1 ounce.

Mix very thoroughly. If desired, disguise the odor by using bergamot or rose.

Carbolic Acid Liniment.—(a). To hasten scaling in scarlet fever, measles, etc; (b). for burns and scalds, and to prevent excoriations:

- (a). Pure Carbolic Acid, $\frac{1}{2}$ drachm.
Pure Olive or Salad Oil, 4 ounces. Mix.
(b). Pure Carbolic Acid, $\frac{1}{2}$ drachm.
Pure Olive Oil, $1\frac{1}{2}$ ounces. Mix.

Carbolic Acid Lotion.—For ulcers, inflammation of the mouth and itching of the vulvæ:

Pure Carbolic Acid, 10 grains.
Distilled Water, 6 ounces.

Dissolve.

Carbolic Acid Ointment.—For diseases of the skin in general:

Carbolic Acid, 5 grains.
Lard, 1 ounce. Mix.

Chloroform Liniment.—For rheumatic and neuralgic pains in general:

- (a). Chloroform, 1 ounce.
Ether, 1 "
Spirits Camphor, 1 "
Laudanum, 1 "
Tinct. Cayenne Pep. $\frac{1}{2}$ " Mix.
(b). Chloroform, 1 ounce.
Olive or Salad Oil, 2 " Mix.

Condition Powders.—For various conditions of the horse:

Anise, 3 ounces.
Fenugreek, 3 "
Rosin, 3 "
Ginger-root, 3 "
Copperas, 3 "
Antimony, $1\frac{1}{2}$ "
Saltpetre, 3 "
Licorice, 3 "

Mix thoroughly; give a tablespoonful as the dose.

Conium Plaster.—For hardened breasts:

Extract Conium and Beeswax, equal parts. Mix and spread.

Creosote Lotion.—For toothache; to be put into the cavity with a pledget of cotton:

Creosote, 10 drops.
Laudanum, $\frac{1}{2}$ drachm.
Chloroform, $\frac{1}{2}$ "
Tinct. Aconite, $\frac{1}{2}$ " Mix.

Creosote Lotion.—For ulcers and diseases of the skin:

Creosote, 10 drops
Olive or Salad Oil, 1 ounce. Mix.

Gargles.—

- (a). Chlorate of Potash, 1 drachm.
Water, 4 ounces.

Dissolve. Apply repeatedly until the throat is fully subjected to the gargle. A little may be swallowed.

- (b). For diphtheria and croup, to dissolve the false membranes.
Fresh Lime, 5 ounces.
Boiling Water, 1 quart.

Shake and let it settle; pour off the clear liquid, and use as (a).

Glycerine Lotion.—To prevent chapping and cracking of the skin:

Pure Glycerine, $\frac{1}{2}$ ounce.
Soft Water, 8 " Mix.

Use it as the regular bathing-water.

Graphites Cerate.—For excoriations, cracked nipples, eczema, etc.:

Graphites, $\frac{1}{2}$ drachm.
Vaseline, 2 ounces. Mix.

Green Salve.—For old sores of all kinds on the horse:

Pine Pitch, 4 ounces.
Rosin, 3 "
Bees-wax, 3 "
Turpentine, $1\frac{1}{2}$ "
Lard, 1 pound.
Mutton Tallow, $\frac{1}{2}$ "
Verdigris, 1 drachm.

Mix well the first five ingredients, then add the turpentine and verdigris, stirring until cool. For old running sores, add to the above one-half ounce to one ounce of blood-root.

Hair-Oil.—

Olive Oil, 4 ounces.
Brandy, 4 "
Oil of Bergamot, $\frac{1}{8}$ "
Attar of Roses, 2 or 3 drops. Mix.

Hamamelis Lotion.—For hemorrhages, varicose veins, chilblains, and a liniment for general use:

- (a). Tinct. Hamamelis, 1 ounce.
Water, 2 " Mix.
(b). Pond's Ext. Hamamelis, 2 ounces.
Water, 1 " Mix

Horse Liniment.—For splint, curb, spavin, warts, and tendency to bony growths, in the horse:

Lard, 4 ounces.

Tallow,	1 ounce.
Mercurial Ointment,	3 "
Strong Tinct. Iodine,	2 "
Oil of Cedar,	2 "
Spirits of Turpentine,	2 "
Bin-iodide Mercury,	3 drachms.

Melt the lard and mercurial ointment over a slow fire and add the fluids and bin-iodide mercury when it begins to cool, stirring them all well together. Use it with caution and keep the parts well oiled after its application.

Hydrastis Ointment.—For sore nipples, cracked lips and hands, chafed or cracked anus, etc.:

Tinct. Hydrastis,	$\frac{1}{2}$ drachm.
Glycerine,	$\frac{1}{2}$ ounce. Mix.

Iodine Lotion.—For rheumatism and swelling of the glands and other parts:

Tinct. Iodine,	1 ounce.
Glycerine or Olive Oil,	$\frac{1}{2}$ " Mix.

Paint the parts with it, using a brush.

Iodine Ointment.—Use, same as that made of iodine-lotion:

Strong Tinct. Iodine,	1 drachm.
Lard or Vaseline,	$\frac{1}{2}$ ounce. Mix.

Lard Ointment.—For raw and inflamed sores in general:

Lard,	1 pound.
White Wax,	4 ounces.

Heat and stir together until cool.

Lime-Water.—Prescribed in various parts of this book, and in frequent demand in the household:

Fresh Unslaked Lime,	3 ounces.
Water (preferably distilled),	1 quart.

Occasionally shake them until the lime is thoroughly slaked; let it settle and use the clear liquid. Keep it in a bottle or jar, well corked.

Lime-Water Liniment.—Chilblains, burns, latter stages of eruptive diseases; will tend to prevent "pitting" in small-pox if the surface is kept smeared with it:

Lime-Water,	2 ounces.
Linseed Oil,	2 "
Tinct. Calendula,	2 drachms. Mix.

Lime-Water and Oil Lotion.—For burns:

Lime-Water,	1 pint.
Linseed or Sweet Oil,	1 " Mix.

Mercurial Ointment.—To be used with care, under a physician's advice:

(a). For itch, etc.:	
Red Precipitate,	12 grains.
Vaseline,	$\frac{1}{2}$ ounce. Mix.

(b). For sore eyelids, and, in general, as a milder preparation:

Red Precipitate,	2 grains.
Vaseline,	2 drachms. Mix.

Mustard Liniment.—For instant relief from pain in neuralgia, toothache, headache, and the like:

Oil of Mustard,	$\frac{1}{2}$ drachm.
Sulphuric Ether,	2 " Mix.

Nettle or Urtica Urens Liniment.—For ulcerated burns:

Tincture Urtica Urens,	1 ounce.
Olive or Salad Oil,	7 " Mix.

Nitric Acid Lotion.—For acne in the beard:

Strong Nitric Acid,	24 drops.
Distilled Water,	6 ounces. Mix.

Oil-of-Almonds Ointment.—For chapped hands, sore lips, and breaks in the skin generally:

Oil of Almonds,	2 ounces.
White Wax,	$\frac{1}{2}$ drachm.
Glycerine,	1 ounce.

Heat and mix the oil and wax, and then stir in the glycerine.

Phytolacca Cerate.—For boils, sore lips, glandular swellings, etc.:

Merrill's Tinct. Phytolacca,	2 drachms.
Vaseline,	1 ounce.

Mix.

Phytolacca Lotion.—For swellings, rheumatism, and inflammation of the breasts:

Tincture Phytolacca,	$\frac{1}{2}$ ounce.
Olive Oil,	2 $\frac{1}{2}$ ounces. Mix.

Potassa Lotion.—For glandular swellings:

Tincture Potassa Iodide,	1 drachm.
Water,	8 ounces.

Dissolve.

Rhus Lotion.—For rheumatism, sprains, etc.:

Strong Tincture Rhus,	1 ounce.
Water,	5 " Mix.

Rhus Lotion.—For ring-bone, spavin, curb, etc., in the horse.

Rhus Tincture,	4 ounces.
Water,	6 " Mix.

Sal Ammoniac Lotion.—For offensive feet:

Sal Ammoniac,	1 drachm.
Soft Water,	4 ounces. Mix.

Sedative Saxoline.—For chapped hands, and other parts of the skin.

Pure Vaseline,	1 ounce.
Boric Acid (pulv.),	20 grains.
Balsam Peru,	30 drops. Mix.

Soap Liniment.—For bruises, sprains, pains, rheumatism, etc.:

Castile Soap,	4 ounces.
Oil of Rosemary,	5 drachms.
Camphor,	2 ounces.
Alcohol,	1½ pints. Mix.

Spermaceti Ointment.—For chapping of the lips, hands, and other parts, and for sunburn:

Spermaceti,	½ ounce.
Oil of Almonds,	1 “
White Wax,	1 drachm,
Rose-Water,	2 ounces.

Melt together the first three and stir in the rose-water while they are cooling.

Stramonium Ointment.—For piles, fissures, painful sores, etc.:

Extract Stramonium,	½ ounce.
Vaseline,	2 “ Mix.

Sulphur Lotion.—For acne of the beard and ulcers:

Tincture Sulphur,	1 drachm.
Water,	1 ounce. Mix.

Sulphur Ointment.—For itch, (a) being for adults and (b) for children:

(a). Flowers of Sulphur, ½ ounce.
Lard or Vaseline, 1½ “
Oil of Bergamot, 15 drops. Mix.

(b). Flowers of Sulphur, 2 drachms.
Balsam Peru, 2 ounces.
Vaseline, 2 “ Mix.

Sulphur Ointment.—For itch, eczema, and divers disorders of the skin:

Iodide of Sulphur,	30 grains.
Lard,	1 ounce. Mix.

Sulphurous Acid Ointment.—For chapped hands, chilblain, ring-worm, tetter, etc.:

Sulphurous Acid,	2 drachms.
Glycerine,	1½ ounces. Mix.

Tannic Acid Lotion.—For ulcers and burns:

Tannic Acid,	5 grains.
Glycerine,	1 ounce. Mix.

Tannic Acid Ointment.—Same uses as Sulphurous Acid Ointment:

Tannic Acid,	1 ounce.
Glycerine,	4 “

Rub together in a mortar and gently heat until completely dissolved.

Vinegar Liniment.—For sprains, especially in the horse: Dissolve in strong vinegar all the salt it will take; apply freely, with bandages.

Vinegar Lotion.—For sponging patients in fever, and for offensive odor about the feet, armpits, etc.:

Strong Cider Vinegar,	1 ounce.
Water,	3 “ Mix.

White Vitriol Lotion.—For simple inflammation of the eyes:

White Vitriol,	1 grain.
Pure Soft Water,	2 tablespoonfuls.

Dissolve. Put a few drops in the eye twice a day.

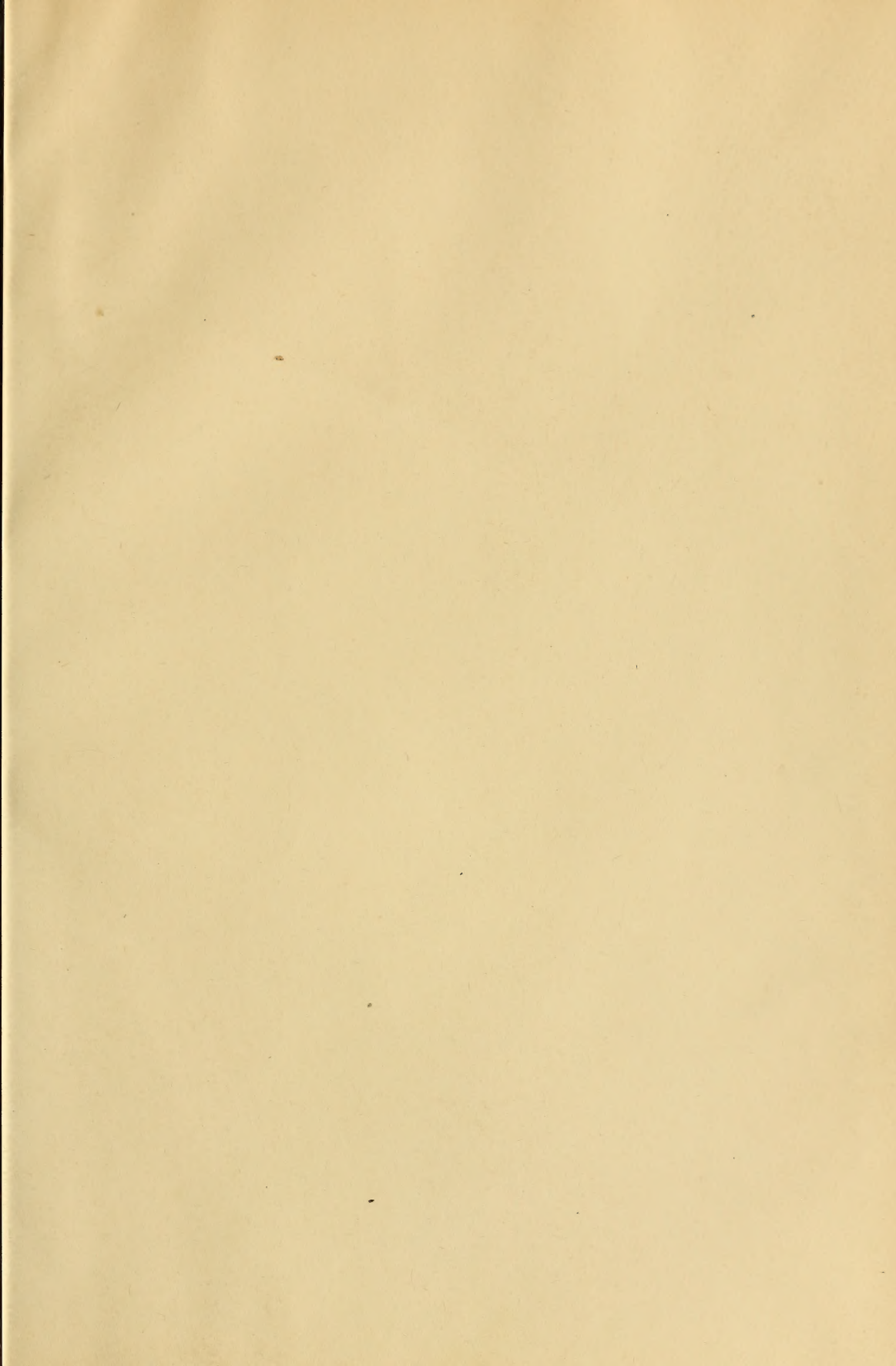
Wintergreen Liniment.—For instant relief in acute rheumatism:

Oil of Wintergreen,	1 ounce.
Olive Oil,	1 “ Mix.

Zinc Ointment.—For burns, blisters, excoriations, inflamed eyelids, and various affections of the skin:

Oxide of Zinc,	1 ounce.
Lard,	6 “ Mix.





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